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Contents

The Reliability of Financial Accounting Data Bases: Some Belgian Evidence

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One of the consequences of the efforts of the Commission of the European Economic Community (EEC) to harmonize accounting disclosure regulations in its member shates[1] is the increase in availability of financial statements in Western Europe in the late 1970s and early 1980s. This increased disclosure has led to the creation of financial accounting databases in several EEC member states.[2] One of these databases, created by the Belgian National Bank, was used to generate the empirical evidence presented in this article. This evidence has, the authors believe, a bearing on two issues: (1) the *reliability* of large financial accounting or financial

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[1] For surveys of these efforts, see K. Van Hulle, "De harmonizatie van het jaarrekeningenrecht in de E.G.," *Tijdschrift voor Economie en Management* (No. 3, 1986), 285–307; and "The EEC Accounting Directives in Perspective: Problems of Harmonization," *Common Market Law Review* (No. 1, 1984).

[2] Choi and Foote surveyed Western European financial accounting databases. They did not mention the database used here, nor did they mention the influence of the EC Commission's harmonization efforts on the construction of databases. See F. D. S. Choi and P.S. Foote, "Western European Databases for Managers, Investors, and Researchers: An Analytical Survey," *The Recent Accounting and Economic Developments in Western Europe* (Urbana, Ill.: University of Illinois Center for International Education and Research in Accounting, 1985), 121–28.

statement databases on which a small (largely U.S.) body of literature has already developed. This issue is important because the reliability of these databases affects the reliability of the research that uses them[3]; and (2) the *degree of firms' compliance* with accounting disclosure regulations, of which a surprising lack of evidence exists in the literature. Both issues are examined here on the basis of one particular set of empirical results.

BACKGROUND OF ACCOUNTING DISCLOSURE LEGISLATION IN BELGIUM

The accounting disclosure legislation that has developed in Belgium since the accounting fiscal year 1977 is a direct consequence of the financial accounting harmonization activities of the EEC.[4] The new Belgian legislation (issued in 1975 and 1976) was modeled on a *draft* of the Commission's Fourth Directive on Company Law, which forms an important part of the framework designed to harmonize the accounting disclosure regulations within the EEC's member states.

The new Belgian legislation prescribed quite rigorously the contents of unconsolidated financial statements[5] for several categories of companies in Belgium, the most important of which are the limited companies and the private limited companies. Such

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[3] This is shown rather dramatically by Vasarhelyi and Yang, who test the hypothesis of normality of financial ratio distributions on the basis of financial statement information for the same firms from two different databases. They observe that the rejection of the normality hypothesis for a number of ratios depends to a certain extent on the choice of the database. See M. Vasarhelyi and D. Yang, "Financial Accounting Databases: Methodological Implications of Using the Compustat and Value Line Databases" (Working paper, Graduate School of Business, Columbia University, 1985). For a survey of empirical work with the Balanscentrale material, see H. Ooghe and C. van Wymeersch, *Financiële analyse van ondernemingen* (Antwerpen: Stenfert Kroese, 1985), chap. 17. The following have appeared in English: W. Buijink and M. Jegers, "Cross-sectional Distributional Properties of Financial Ratios in Belgian Manufacturing Industries: Aggregation Effects and Persistence over Time," *Journal of Business Finance and Accounting* (No. 3, 1986), 337–63; and H. Ooghe and E. Verbaere, "Predicting Business Failure on the Basis of Accounting Data," *International Journal of Accounting* (Spring 1985), 19–44.

[4] For a more complete treatment in English of the Belgian disclosure legistlation within the EEC framework, see C. Lefebvre, "Development of Belgian Accounting Standards within the European Economic Community Framework," *International Journal of Accounting* (Fall 1981), 103–32, and "The Fourth Directive in Belgium" in *EEC Accounting Harmonization Implementation and Impact of the Fourth Directive*, ed. S. J. Gray (Amsterdam: North Holland, 1984), 11–28; and H. Theunisse, "Accounting and Reporting in Belgium," *Advances in International Accounting*, (vol. 1, 1987), 191–248.

[5] The EC commission has issued a seventh directive on company law that harmonizes the regulation of consolidated financial statements among EC member states. This seventh directive has yet to be incorporated in Belgian law, nor do regulations exist in Belgium to require the publication of semiannual or quarterly financial statements. As a result, only annual unconsolidated financial statements are publicly available.

companies must file at least a concise set of financial statements if they exceed one of three size limits: fifty employees, total assets of 25 million BEF ($1 = ±40 BEF), or sales of 50 million BEF. If the company exceeds one of three additional size limits, it is required to file a more detailed or complete set of financial statements: one hundred employees, total assets of 50 million BEF, or sales of 100 million BEF. Appendix A indicates the structure and contents of the balance sheet and the profit and loss statement prescribed by the new legislation.

The new legislation structured the format of the numerical data in the balance sheet, results statement, and notes; it also contained a series of de facto accounting standards. The new law also established a commission of accounting standards, Commissie voor Boekhoudkundige Normen (CBN), with the mission to solve problems arising from the practical implementation of the new legislation. Before 1986, the CBN had issued nineteen bulletins with further accounting standards,[6] which are not strictly binding.[7]

To understand more fully the implications of the results of our study, it should be noted that the new regulations were not only applied to the small number of companies quoted on the Belgian Stock Exchanges but also to all companies in the categories mentioned. Beginning with the 1984 accounting fiscal year, the Belgian accounting disclosure legislation again changed, this time in order to comply with the final version of the Fourth Directive of the EEC issued in 1978. The empirical material presented in this article therefore applies to the period 1977 to 1983.

DATA: THE BALANSCENTRALE FINANCIAL STATEMENT TAPES

One of the consequences of the new accounting disclosure regulations of 1975 and 1976 was the creation of a new department, the Balanscentrale, within the Belgian National Bank. It had the task of transferring to a magnetic tape the *numerical* data of the financial statements of all companies that had to file these under the legislation.[8] This resulted in a set of seven annual tapes for the period from 1977 to 1983.[9]

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[6] Unfortunately, no numbering system designates these accounting standards and the de facto standards in the law, as is possible in the United States.

[7] For a discussion of the status of the CBN, see S. Van Crombrugghe, "Boekhoudrecht en boekhoudtheorie," *Tijdschrift voor Privaatrecht* (No. 1, 1981), 973–1017; and Theunisse, "Accounting and Reporting in Belgium."

[8] Companies for which the financial statements were not transferred to the tapes were those in the banking, financial services, and insurance industries, and the pure holding companies that use a different format. See Theunisse, "Accounting and Reporting in Belgium."

[9] The Balanscentrale also records all financial statements on microfilm so that the narrative material that is not transferred to the magnetic tape can be easily obtained.

All financial statements were filed with the Balanscentrale by the companies involved on special forms in which the format of the numerical material was rigorously structured. Appendix A shows part of these forms. The information was then transferred to the tapes, with built-in checks to ensure that the information submitted was not altered.[10] With one exception, the Balanscentrale corrected the results appropriation statement from 1980, a point that will be discussed later.

The number of financial statements on each tape and the total annual sales of those companies,[11] shown as a percentage of all declarers in Belgium of value-added tax (VAT), indicates the importance of these companies to the Belgian economy (see Exhibit 1). The total number of VAT declarers is also given; this number is a measure of all firms in Belgium.

The data in Exhibit 1 clearly indicate the importance of the companies on the tapes to the Belgian economy. In 1983, for instance, these companies generated more than 70 percent of total sales in Belgium. The data reported here are evidently comprehensive.

Exhibit 1. Balanscentrale Data

Year	Number of financial statements taped			Number of VAT declarants	Total sales of companies on the tapes* (percentage of the sales of all VAT declar-ants)
	Complete	Concise	Total		
1977	8032	1996	10028†	428193	49.70
1978	10827	2631	13498	430680	64.14
1979	11708	3334	15042	432430	64.19
1980	12372	3326	15698	434265	65.22
1981	12942	3405	16347	434753	66.28
1982	13574	3437	17011	439869	68.82
1983	14349	3722	18071	447029	69.60

Source: Belgian National Statistical Institute (NIS), personal communication.
* See note 11 in text.
† In 1977 the only companies that were required to file were those that used the calendar year as their accounting fiscal year.

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[10] In fact, each financial statement is entered twice by different persons, after which the two inputs are compared and errors discovered are corrected.
[11] Concise financial statements do not contain the item turnover; total sales is calculated only from complete financial statements.

The information presented in the next sections was obtained by subjecting each financial statement on the annual tapes to a series of tests.

RELIABILITY OF A FINANCIAL ACCOUNTING DATA FILE
Previous Literature

The reliability of financial accounting or financial statement databases[12] has been the subject of a number of studies, notably those by San Miguel, Stone and Bublitz, Vasarhelyi and Yang, and Thomas and Swanson.[13] These four studies either compare financial statements of the same firms in different databases, or they compare financial statements in databases with the original documents. These studies are summarized in Exhibit 2. As is evident from a review of this exhibit, three of the four studies reveal a considerable number of discrepancies, which signals the need for a careful screening of financial accounting databases.

The Testing Procedure for This Study

The four studies previously mentioned compared the same financial statement items for the various companies represented. Because only one database is available for Belgian firms, a comparison of databases is not possible in the present study. Nor is it possible to compare information on the tapes with the information on the original documents. Consequently, errors in the original documents cannot be distinguished from those introduced in the process of transferring the original information to the tapes. It can be assumed, however, that no transcription errors exist due to the Balancentrale procedure to avoid transfer errors. The importance of this is that, assuming that no transcription errors occurred, the material on the tapes accurately indicates reporting practice with regard to the numerical data required by the Belgian accounting legislation.

In this study the reliability of the information on the tapes is measured by the number of logical errors, arithmetical errors, and failures to give details when required. Based on information in Appendix A, the following is an example of each kind of error:

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[12] For a discussion of this subject, see G. Foster, *Financial Statement Analysis* (Englewood Cliffs, N.J.: Prentice-Hall, 1986), appendix to chap. 3.

[13] J. San Miguel, "The Reliability of R&D Data in Compustat and 10-K Reports," *Accounting Review* (No. 3, 1977), 636–41; M. Stone and B. Bublitz, "An Analysis of the Reliability of the FASB Data Bank of Changing Price and Pension Information," *Accounting Review* (No. 3, 1984), 469–73; Vasarhelyi and Yang, "Financial Accounting Databases"; and L. Thomas and E. Swanson, "Additional Considerations When Using the FASB Data Bank of Changing Price Information," *Accounting Review* (No. 2, 1986), 330–36.

Exhibit 2. Reliability of Financial Accounting Databases: Previous Studies

	San Miguel (1977)	Stone, Bublitz (1984)	Vasarhelyi, Yang (1985)	Thomas, Swanson (1986)
Year(s) studied	1977	1979, 1980	1981[a]	1979– 1982
Number of items compared	1	7[b]	7	2[c]
Information sources compared	Compustat vs. SEC 10K forms	SFAS No. 33 data tape vs. original annual reports	Compustat vs. Value Line	SFAS No. 33 data tape and Compustat and Value Line vs. original reports[d]
Number of comparisons made	256	176 (max.)	1,479	171
Total number of comparisons	256	2,178	8,549[e]	684
Total number of discrepancies	78 (30.5%)	39 (1.8%)	1,284[f] (15.02%)	121 (17.7%)

[a] Detailed results are given only for this year.

[b] Correctness of a price level code was also checked; those results are not given here.

[c] The items are two variables calculated from the raw data.

[d] The SFAS No. 33 data tape was used to obtain current cost data; the Compustat and Value Line databases were used to obtain historical cost data.

[e] This is the (effective) number of comparisons. See M. Vasarhelyi and D. Yang, "Financial Accounting Databases: Methodological Implications of Using the Compustat and Value Line Databases (Working paper, Graduate School of Business, Columbia University, 1985).

[f] Only discrepancies, >1%.

a logical error — an amount is given for both the item profit (4509) and loss (5509) for the financial year;

an arithmetical error — the sum of the items turnover (5109), inventory variations (5119), internal works (5129), and other operating income (5139) is not equal to the amount given for operating income (5199), ± *1 percent of that amount to avoid including immaterial (rounding) errors;* and

a failure to detail — an amount is given for the item reserves (2399),

but this amount is not detailed in items legal reserve (2309), undistributable reserve (2319), reserves exempted from taxation (2329), and distributed reserves (2339).

These examples of tests are limited to items from the balance sheet and results statement presented in Appendix A. The same kind of errors can be detected in the results appropriation statement and in the notes. Furthermore, quite a few items from the balance sheet and the results statement must be detailed more comprehensively in the notes. This detail would allow one to test for inconsistencies among information items from different parts of the financial statements. To detect these errors, a large number of tests were formulated.[14] The tests can be grouped according to the major sections of a financial statement: balance sheet tests, profit and loss statement tests, the results appropriation statement tests, the notes test, and a fifth group called consistency tests (i.e., tests that use information from different parts of a financial statement).

The number of tests applied to a particular financial statement depended on whether the financial statement was concise or complete and whether it had a results statement in columnar or account form. It also depended on the accounting fiscal year because, as mentioned earlier, the Balanscentrale has corrected the results appropriation statement in the years since 1980. These corrections affected the number of tests. See Exhibit 3 for the number of tests for each type of financial statement and the number of tests used to detect logical errors, arithmetical errors, and failures to detail. The last two types of tests are obviously the same[15] (as can be seen in the examples of tests given earlier).

The method used in the tests to measure the quality of financial statement material will give only partial results. Other aspects of a financial statement exist; these relate to valuation, for which the Belgian and the CBN disclosure regulations apply, but which fall outside the scope of this study[16] because that information has not been transferred to the tapes.

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[14] As a preliminary step, the material in each financial statement was checked for conformity with the sign conventions specified for each item in the special financial statement format of the Balanscentrale. This is necessary, although it alters the material submitted (errors of the type discussed in the current paper may be concealed by failures to respect the sign conventions).

[15] A complete list of the tests is given in an appendix to M. Jegers and W. Buijink, "The Quality of a New Source of Financial Accounting Data in Belgium: An Exploratory Analysis" (Paper presented at a Workshop on Accounting and Financial Information, EIASM, Brussels, 1983), and is available upon request.

[16] For an empirical discussion of how companies in Belgium actually implement the

Exhibit 3. Number of Tests and Their Categorization

Financial statement	Results statement	Type of test	Year 1977–1979	1980–1983
Concise	Account form	L	12	14
		A/F	41	39
		total	53	53
	Colum-nar form	L	14	14
		A/F	41	41
		total	55	55
Complete	Account form	L	15	19
		A/F	103	99
		total	118	118
	Colum-nar form	L	11	19
		A/F	100	101
		total	111	120

L = tests for logical errors.
A/F = tests for arithmetical errors and failures to detail

QUALITY: RESULTS OF THE STUDY

The average number of logical and arithmetical errors and the average number of failures to detail per financial statement for each of the seven years (1977 to 1983) are reported in Exhibit 4.[17] The data in the exhibit show a marked difference between the results for two subperiods, one before and one after 1979. The improvement, a lower average number of errors in the second subperiod, does not, however, necessarily reflect an improvement in the quality of the financial statement material filed by the companies involved because the Balanscentrale itself, as mentioned, has corrected the results appropriation statements where necessary since 1980.

This correction is evident in the data in Exhibit 5, which include the average number of logical and arithmetical errors and failures to detail for the major parts of the financial statements. The improvement noted is revealed primarily in the average number of errors in the results appropriation statements. Also evident from

rules with regard to inventory valuation, see E. Van Den Broeck, "Onderzoek naar de waarderingsregels voor voorraden gebruikt door de Belgishce ondernemingen," *Kwartaalschrift Accountancy en Bedrijfskunde* (No. 1, 1984).

[17] This section and the next summarize and update earlier work by the authors; see Jegers and Buijink, "The Quality of a New Source of Financial Accounting Data in Belgium"; and "De kwaliteit van een nieuwe bron van financiële en boekhoudkundige gegevens in Belgie: een verkennende analyse," *Tijdschrift voor Economie en Management* (No. 4, 1984), 477–93. See Exhibit 3.

Exhibit 4. Overall Results: All Years, All Financial Statements

	1977	1978	1979	1980	1981	1982	1983
Average absolute number of logical and arithmetical errors	1.68	1.60	1.48	.82	.79	.82	.78
Average absolute number of failures to detail	1.43	1.25	1.17	1.01	1.05	1.00	.97
Total*	3.11	2.85	2.65	1.83	1.84	1.82	1.75
Number of financial statements	10,028	13,498	15,042	15,698	16,347	16,347	18,071

* Totals may not tally because of rounding

Exhibit 5. Results (Average Absolute Number of Errors) for Major Parts of a Financial Statement: All Years, All Financial Statements

	1977	1978	1979	1980	1981	1982	1983
Balance sheet	.38	.31	.29	.24	.24	.18	.16
Results statement	.38	.34	.33	.29	.29	.30	.30
Results appropriation	.51	.49	.55	.08	.09	.09	.09
Notes	.45	.47	.39	.31	.31	.33	.30
Consistency*	1.40	1.26	1.11	.91	.93	.93	.93
Total†	3.11	2.85	2.65	1.83	1.84	1.82	1.75

Note: No separate results for errors and failure to detail are given here.
* This heading groups tests that use information from two of the four parts of a financial statement.
† Totals may not tally because of rounding.

the data in Exhibit 5 is the relative importance of consistency errors.

These results are presented differently in Exhibit 6. This exhibit includes the percentage of error-free financial statements on the tapes; that is, financial statements that are free of logical and arithmetical errors, disregarding possible immaterial ±1 percent errors, and shows no failures to detail. The difference between the two subperiods is also evident. The results can be expressed in a different way: the chance of a randomly selected 1977 financial statement having errors is approximately 83 percent (the expected number of errors is 3.11). A similar analysis of 1983 data indicates that the chance is still 70 percent (with the expected number of

Exhibit 6. Overall Results: Percentage of Error-free Financial Statements, All Years, All Financial Statements

	1977	1978	1979	1980	1981	1982	1983
Percentage of companies that give error-free and fully detailed financial statements	16.77	18.83	19.74	30.35	29.36	30.54	31.91

errors of 1.75). The improvement cannot be completely attributed to more correct financial statement material being filed with the Balanscentrale. As in the case of the U.S. studies, the results suggest that careful screening of the data (which, however, has a price, as will be discussed in the next section) is necessary before using this financial accounting database.

IMPLICATIONS OF ERRORS IN FINANCIAL ACCOUNTING DATABASES

The Consequences of Logical and Arithmetical Errors and Failures to Detail

An important consequence of errors and failures to detail is the bias introduced when the error rate is related to company characteristics because this will lead to a disproportionate representation of some groups of firms in the samples used in empirical analysis. This effect is, of course, influenced by the subject of the study for which the sample is designed.

To measure this bias for 1977 and 1983, the absolute number of errors and of failures to detail in all financial statements was divided by the maximum possible number of errors and failures to detail (see Exhibit 3) given the type (concise or complete, and statement of results in columnar or account form) of the financial statement reviewed, to give the relative number of errors and failures to detail per financial statement.[18] These numbers were then averaged for six subgroupings of companies according to the following company characteristics:

- size (measured by total assets);
- profitability (measured by return on equity);
- profitability (measured by return on total assets);

[18] This step was to control for variations in the error rates in the different groups formed because the relative number of complete versus concise statements differed; complete statements being subjected to more tests are likely to produce more errors.

• liquidity (measured by the current ratio);
• financial structure (measured by equity/total assets × 100 percent); and
• industry affiliation: affiliation to one-digit NACE industries.

For these subgroupings, the relative importance of failure to detail in the total number of errors and failure to detail was also established and expressed as a percentage.

The detailed results are shown in Appendix B. The univariate analysis indicates the following:

1. The error rate decreases with increasing company size;
2. Increased leverage coincides with a higher error rate;
3. Profitability (both measures) does not seem to influence the error rate;
4. Liquidity does not appear to influence the error rate;
5. A fairly stable difference exists in the quality of financial statements between industries, which no doubt in part reflects differences in optimal firm size among industries. The relative importance of failures to detail seems to be influenced only by size: it decreases with increasing size. It is not affected by the other five company characteristics. The results for the other years show similar patterns and are, therefore, not included here.

The analysis indicates that a selection bias for size and degree of leverage may result if those variables are of interest to researchers and if the researchers screen the tape files to eliminate observations with a higher than acceptable number of errors in the relevant parts of the financial statements. Obviously, the data in Appendix B could be established for only those companies on the tapes for which it was possible to compute a company-specific characteristic in question (i.e., the first five company characteristics).

Data regarding the loss of observations when measuring these five characteristics in 1977 and 1983 are presented in Exhibit 7.

Exhibit 7. Loss of Observations (%) when Measuring Selected Company Characteristics

	1977	1983
Size	0.5	0.1
Equity/total assets	13.0	1.5
Return on equity	17.1	7.6
Return on total assets	5.4	5.5
Current ratio	2.3	1.1

Loss of observations, a more immediate consequence of errors and failure to detail in financial accounting databases, can be quite substantial. For another example, in the context of a study of the properties of financial ratio distributions using the Balanscentrale tapes, see Buijink and Jegers.[19]

A Different Perspective: The Degree of Compliance with Accounting Regulations

In this section the perspective is changed. The focus is no longer the problems of empirical work given the errors found in financial accounting databases but the relevance of and reasons for the observed error rates. Indeed, given the earlier warning of the possibility of the Balanscentrale introducing errors in the transcription process, the results in the previous sections indicate the care with which Belgian companies compile their financial statements (i.e., their apparent willingness to comply with the accounting regulations issued). This dimension is not present in the empirical results of the four U.S. studies previously mentioned. Accounting literature is surprisingly lacking in empirical studies on the degree of compliance of companies with disclosure regulations.[20] Given the description of the Belgian accounting regulations presented here, two areas on which to focus to measure the degree of compliance can be delineated: (1) logical errors, arithmetical errors having a certain materiality, and failure to give numerical details when required; and (2) errors or vagueness in the more narrative elements (such as the description of the inventory valuation methods used) in financial statements or in the structure of the financial statements, such as the naming and sequencing of items that are required (i.e., the numerical material may itself be correct but incorrectly presented).

The data discussed in the previous sections therefore also partially indicate the apparent degree of compliance with the Belgian accounting regulations. It is partial because we measured only the degree of compliance as far as the numerical material is concerned.

The reason for the observed degree of compliance is interesting. Three possible reasons exist: (1) ignorance — the companies involved do not adequately understand the regulations; (2) naive carelessness — the companies involved simply do not mind the

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[19] Jegers and Buijink, "Cross-Sectional Distributional Properties of Financial Ratios in Belgian Manufacturing Industries."

[20] The only reference to compliance problems in the U.S. literature (noted by George Foster) is, as far as we know, C. Olsen, "Valuation Implications of SFAS No. 33 for Electric Utility Investors," *Journal of Accounting Research* (Supplement 1985), 28–47.

presence of errors in their financial statements; or (3) deliberate carelessness — the companies involved are deliberately careless in order to reduce the usefulness of their financial statements to outside parties.[21] Ignorance of the regulations is a problematic hypothesis, however, because it hardly explains the observed logical and arithmetical errors contrasted to the failures to detail.

Naive carelessness is an interesting hypothesis. An auxiliary hypothesis that the outside parties, the users of financial statements, do not object to errors would be necessary to explain the observed small decline in error rates for the period studied. If this hypothesis holds, the information produced in financial statements has little value to outside parties, or at least not enough to press the producers of that information for stricter compliance.

The deliberate carelessness hypothesis is also interesting because it relates to the concept, presented in the literature, that company managers are not naive in selecting accounting methods.[22] According to the deliberate carelessness hypothesis, the observed error rates are determined by management, which weighs the costs and benefits of noncompliance. A complete analysis of this hypothesis should, therefore, involve the enumeration of possible costs and benefits of noncompliance, as well as the identification of the decision maker. As far as the decision maker is concerned, a large number of the companies included on the tapes are nonquoted limited or largely private limited companies in which little separation between management and control is expected.

A complete analysis of the empirical consequences of both the naive and the deliberate carelessness hypotheses is not attempted here, but the results presented in the following section suggests some interesting, if contradictory, facts.

1. The positive relation between the size of the company and the degree of compliance seems to indicate relatively higher costs of

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[21] At this point it is interesting to consider the effect that the presence of an independent auditor may have on the quality of Belgian financial statements. In the period considered by this paper, only companies quoted on the Belgian Stock Exchange (Brussels and Antwerp) were mandated to use the independent auditors. Approximately 130 of these quoted companies have financial statements on the tapes each year. Error rates, including failure to detail, do not compare favorably with the error rates in the financial statements of the nonquoted companies.

[22] For an overview of this literature, see L. Kelly, "The Development of a Positive Theory of Corporate Management's Role in External Financial Reporting," *Journal of Accounting Literature* (No. 1, 1983), 111–50. For a recent, very clear, conceptual discussion, see G. Benston, "The Benefits and Costs of Voluntary Accounting Disclosure — A Discussion of: 'Current Cost Disclosures and Nondisclosures: Theory and Canadian Evidence,' " *Contemporary Accounting Research* (No. 3, 1986), 35–44.

noncompliance, possibly of a political and/or judicial nature, to large firms. This could correlate with the deliberate carelessness hypothesis. Moreover, size is the only factor that is related to the willingness of firms to supply the required detailed information, which reinforces this conclusion, given the preceding remark concerning ignorance.

2. The fact that increased importance of nonequity funds coincides with increased errors seems to suggest, however, that creditors are not pressing companies to comply. This seems to support the naive carelessness hypothesis.

CONCLUDING REMARKS

The possible dangers of using financial accounting databases containing errors need not be enumerated here. From the degree of compliance perspective, however, this paper suggests the need for a thorough investigation of the reception of accounting regulations in an economy.

This paper presents only a partial indication of the degree of compliance with Belgian accounting regulations by firms. At this time, little is known of the compliance with other aspects of Belgian accounting regulations, such as the standards of the CBN. These areas deserve further attention.

APPENDIX A. A COMPLETE BALANCE SHEET AND RESULTS STATEMENT

ASSETS			BALANCE
	Code Numbers		
I. Formation expenses	0199		XXX
II. Intangible fixed assets	0299		XXX
III. Tangible fixed assets	0399		XXX
A. Land and buildings	0309	XXX	
B. Installations, machines and equipment	0319	XXX	
	0329	XXX	
C. Furniture and rolling stock			
D. Construction in progress and advance payments	0339	XXX	
E. Fixed assets held on long lease, lease financing or with similar rights	0349	XXX	
	0359	XXX	
F. Other tangible fixed assets			
IV. Financial fixed assets (investments)	0499		XXX
A. Affiliated companies			
1. Participations (Majority interests)	0401	XXX	
2. Accounts receivable	0402	XXX	
B. Associated companies			
1. Participations (Minority interests)	0411	XXX	
2. Accounts receivable	0412	XXX	
C. Other financial fixed assets			
1. Shares and stock	0421	XXX	
2. Fixed income securities	0422	XXX	
3. Other receivables and guaranty cash deposits	0423	XXX	
V. Accounts receivable at more than one year	0599		XXX
A. Trade debtors	0509	XXX	
B. Other accounts receivable	0519	XXX	
VI. Inventories	0699		XXX
A. Raw materials, consumables and supplies	0609	XXX	
B. Goods in process, work in progress, scrap	0619	XXX	
C. Finished goods	0629	XXX	
D. Trade stock	0639	XXX	
E. Advance payments on purchases of inventories	0649	XXX	
VII. Accounts receivable within the year	0799		XXX
A. Trade debtors	0709		
B. Other accounts receivable		XXX	
1. Unpaid called-up capital	0711		
2. Other debtors	0712	XXX	
		XXX	
VIII. Short-term investments	0899		XXX
IX. Liquid assets	0999		XXX
X. Transitory accounts	1099		XXX
Total	1999		XXX

SHEET   LIABILITIES

		Code Numbers		
I.	Capital	2199		XXX
	A. Subscribed capital (issued and paid up)	2109	XXX	
	B. Uncalled capital (−)	2119	XXX	
II.	Share premium account	2299		XXX
III.	Reserves	2399		XXX
	A. Legal reserve	2309	XXX	
	B. Undistributable reserves	2319	XXX	
	C. Reserves exempted from taxation	2329	XXX	
	D. Distributable reserves	2339	XXX	
IV.	Profit carried over or Loss carried over (−)	2499		XXX
V.	Revaluation surpluses	2599		XXX
VI.	Capital subsidies (subventions) received	2699		XXX
VII.	Provisions for risks and charges	2799		XXX
VIII.	Accounts payable at more than one year	2899		XXX
	A. Subordinated loans			
	1. Convertible	2801	XXX	
	2. Non-convertible	2802	XXX	
	B. Non-Subordinated debenture loans			
	1. Convertible	2811	XXX	
	2. Non-convertible	2812	XXX	
	C. Pension fund	2829	XXX	
	D. Debts resulting from long lease, lease financing and similar debts	2839	XXX	
	E. Credit institutions	2849	XXX	
	F. Trade creditors	2859	XXX	
	G. Advanced payments received	2869	XXX	
	H. Other debts	2879	XXX	
IX.	Accounts payable within the year	2999		XXX
	A. Debts at more than one year falling due within the financial year	2909	XXX	
	B. Credit institutions	2919	XXX	
	C. Trade creditors	2929	XXX	
	D. Debts and liabilities for taxes, social security charges and remunerations	2939	XXX	
	E. Advance payments received	2949	XXX	
	F. Other loans and guaranty cash deposits received	2959	XXX	
	G. Other debts	2969	XXX	
X.	Transitory accounts	3099		XXX
	Total			XXX

Profit-and-Loss Statement
(Alternative presentation in columnar or vertical form)

	Code Numbers		
I. Operating income (sales and services)	5199		XXX
A. Turnover	5109	XXX	
B. Inventory variations of goods in process, finished goods, scrap and work in progress (increase +, decrease −)	5119	XXX	
C. Internal works on fixed assets (own construction) capitalized	5129	XXX	
D. Other operating income	5139	XXX	
I. Operating expenses (cost of sales and services)	4199		(−)XXX
A. Trade stock, raw materials, consumables and supplies			
1. Purchases	4101	XXX	
2. Inventory variations (increase +, decrease −)	4102	XXX	
B. Miscellaneous goods and services			
1. Purchases and supplies	4111	XXX	
2. Costs carried over (+), costs to be carried over (−)	4112	XXX	
C. Personnel			
1. Remunerations, pensions and other personnel costs	4121	XXX	
2. Pension fund (appropriation +, utilization −)	4122	XXX	
D. Depreciation, reductions in value (amounts written off) and provisions for risks and charges			
1. Depreciation (other than those referred to sub II.A.2)	4131	XXX	
2. Reductions in value on inventories and on accounts receivable within the year	4132	XXX	
3. Provisions for risks and charges (appropriation +, utilization −)	4133	XXX	
E. Other operating expenses	4149	XXX	
I. Operating results	5100		XXX
II. Financial income	5299		XXX
A. Income from financial fixed assets (investments)	5209	XXX	
B. Income from other accounts receivable, short-term investments and liquid assets	5219	XXX	
C. Other financial income	5229	XXX	
II. Financial expenses (charges)	4299		(−)XXX
A. Charges on accounts payable at more than one year			
1. Interest	4201	XXX	

	Code Numbers			
2. Amortization of premiums and issuing expenses	4202	XXX		
3. Interest subsidies received (−)	4203	XXX		
B. Charges from debts at maximum one year	4219	XXX		
C. Other financial charges				
1. Reductions in value on financial fixed assets (investments), on accounts receivable at more than one year, on short-term investments and on liquid assets	4221	XXX		
2. Miscellaneous financial charges	4222	XXX		
II. Financial results	5200		XXX	
III. Exceptional income	5399		XXX	
A. Reversal of depreciation, reductions in value, provisions for risks and charges and for pensions				
1. Reversal of depreciation	5301	XXX		
2. Reversal of reductions in value	5302	XXX		
3. Reversal of provisions for risks and charges	5303	XXX		
4. Reversal of pension fund	5304	XXX		
B. Surpluses on realization of fixed assets out-of-use	5319	XXX		
C. Other exceptional income	5329	XXX		
III. Exceptional charges	4399			(−)XXX
A. Depreciation, reductions in value, provisions for risks and charges and for pensions				
1. Depreciation	4301	XXX		
2. Reductions in value	4302	XXX		
3. Provisions for risks and charges	4303	XXX		
4. Pension fund	4304	XXX		
B. Losses on realization of fixed assets	4319	XXX		
C. Other exceptional charges	4329	XXX		
D. Transfer to reserves exempted from taxation	4339	XXX		
III. Exceptional results	5300		XXX	
IV. A. Reversal of tax provisions and adjustments	5409			XXX
B. Income Tax (tax on profits)	4409			(−)XXX
1. For the financial year	4401	XXX		
2. For previous financial years	4402	XXX		
IV. Taxes	5400		XXX	
V. Profit	4509		XXX	
Loss for the financial year	5509		XXX	

Source: Chris Lefebvre, "Development of Belgian Accounting Standards within the European Economic Community Framework," *International Journal of Accounting* (Fall 1981), 128–31.

APPENDIX B. THE RELATION BETWEEN COMPANY CHARACTERISTICS AND THE QUALITY OF FINANCIAL STATEMENTS IN 1977 AND 1983

In this appendix, errors = relative number of errors in percentage, failure to detail = the fraction of the relative number of errors due to failure to detail as a percentage, and n. = number of financial statements involved.

Table 1. Average Relative Number of Errors (percentage) per Size Class of Total Assets (10^6 BEF) and the Relative Importance of Failure to Detail

	Size: Total Assets					
	0–25	25–50	50–100	100–500	500–1000	>1000
	Errors					
1977	3.6	4.0	2.9	2.6	2.3	2.2
1983	1.8	2.0	1.7	1.5	1.3	1.4
	Failure to detail					
1977	48%	49%	48%	44%	42%	33%
1983	60%	59%	56%	51%	44%	33%
	n.					
1977	846	3,622	2,447	2,335	372	359
1983	2,434	5,959	4,142	4.053	701	776

Table 2. Average Relative Number of Errors (percentage) per Class of Equity/ Total Assets Ratio (percentage) and the Relative Importance of Failure to Detail

	Leverage: Equity on total assets				
	<0	0–25	25–50	50–75	75–100
	Errors				
1977	2.9	2.8	2.7	2.5	2.1
1983	1.5	1.7	1.7	1.6	1.3
	Failure to detail				
1977	43%	43%	42%	42%	41%
1983	57%	55%	53%	55%	57%
	n.				
1977	385	4,167	2,469	1,121	581
1983	917	7,557	5,114	2,532	1,680

Table 3. Average Relative Number of Errors (percentage) per Class of Results/ Equity Ratio (percentage) and the Relative Importance of Failure to Detail

| | Profitability: Return on equity | | | | |
	<0	0–10	10–20	20–30	>30
			Errors		
1977	2.7	2.6	2.5	2.6	2.7
1983	1.7	1.7	1.6	1.6	1.7
			Failure to detail		
1977	42%	42%	42%	42%	43%
1983	54%	55%	53%	56%	57%
			n.		
1977	2,215	3,429	1,224	528	917
1983	3,505	6,604	3,108	1,447	2,221

Table 4. Average Relative Number of Errors (percentage) per Class of Results/ Total Assets Ratio (percentage) and the Relative Importance of Failure to Detail

| | Profitability: Return on total assets | | | | |
	<0	0–5	5–10	10–15	>15
			Errors		
1977	3.2	3.2	3.1	2.7	3.4
1983	1.8	1.7	1.6	1.6	1.6
			Failure to detail		
1977	47%	47%	45%	47%	48%
1983	54%	55%	54%	58%	56%
			n.		
1977	2,519	5,261	1,067	332	304
1983	3,541	9,220	2,682	921	721

Table 5. Average Relative Number of Errors (percentage) per Class of Current Ratio and the Relative Importance of Failure to Detail

| | Liquidity: Current ratio | | |
	0–1	1–2	>2
		Errors	
1977	3.2	3.1	3.2
1983	1.7	1.7	1.6
		Failure to detail	
1977	46%	47%	47%
1983	55%	55%	56%
		n.	
1977	2,366	5,547	1,882
1983	4,039	10,072	3,761

Table 6. Average Relative Number of Errors (percentage) per One-digit NACE Industry and the Relative Importance of Failure to Detail

	0	1	2	3	4	5	6	7	8	9
					Errors					
1977	4.33	2.13	2.84	3.20	3.35	3.66	3.37	2.77	3.30	3.55
1983	1.77	1.71	1.60	1.69	1.81	1.90	1.79	1.56	1.40	1.63
					Failure to detail					
1977	56%	28%	45%	46%	48%	45%	47%	45%	46%	40%
1983	59%	22%	49%	51%	54%	52%	56%	57%	59%	53%
					n.					
1977	52	68	566	865	1,819	963	3,554	542	1,452	147
1983	175	68	765	1,276	2,700	1,267	7,331	1,098	2,910	481

Industry: One-digit NACE* industries (0 = agriculture, 1 = energy and water, 2 = extraction and processing of nonenergy-producing minerals; chemical industry, 3 = metal manufacture; engineering, 4 = other manufacturing industries, 5 = building, 6 = distributive trades, 7 = transportation and communication, 8 = banking and finance; insurance, 9 = other services.)
* NACE designates the industry classification of the European Community.

Important Events in the Development of the Accounting Profession in Mexico

ADRIAN WONG-BOREN*

The development of the accounting profession in many countries has been influenced by numerous economic forces. (See, for example, Edwards, Carey, Markell, and Murphy.[1]) Mexico is no exception. This paper presents a historical analysis of the ways different forces have influenced the development of accounting in Mexico. The purposes of this paper are twofold. First, as Choi and Mueller, and Schoenfeld emphasized,[2] the need to study accounting institutions of different countries is increasing. As national economies become more and more interdependent through international trade, it is increasingly important to understand the business institutions of one's trading partners. For example, Mexico's importance as a trading partner for the United States is expected to increase substantially because Mexico recently became a member of the General Agreement on Trade and Tariffs. Second, to understand the societal role of accounting, one must be able to

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[1] J.D. Edwards, *History of Public Accounting in the United States* (University of Alabama Press, 1978) ; J. L. Carey, "From Technician to Professional — 1896–1936," *The Rise of the Accounting Profession*, vol. 1 (New York: American Institute of Certified Public Accountants, 1969); William Markell, "Development of Accounting Education and the Accounting Profession in Third World Countries: Botswana," *International Journal of Accounting* (Fall 1985), 99–106; and George J. Murphy, "A Chronology of the Development of Corporate Financial Reporting in Canada: 1850 to 1983," *Accounting Historians Journal* (Spring 1986), 31-62.

[2] F. D. S.Choi and G. G. Mueller, *International Accounting* (Englewood Cliffs, N. J.: Prentice-Hall, 1984); and H. W. Schoenfeld, "International Accounting Development, Issues and Future Directions," *Journal of International Business Studies* (Fall 1981), 83–100.

explain and predict accounting practice. The need to study theories, practices, and behaviors in other than U.S. settings can help us understand the forces behind the development of our own institutions. As Baladouni states,

It is of paramount importance that we identify those specific environmental elements or variables which have had and continue to have a direct bearing on the development of accounting. The successful identification of these variables can provide us with the necessary ground for making certain generalizations about accounting behavior.[3]

Accounting regulation seems to be a sine qua non in the development of accounting.[4] The agencies producing such regulations have varied from place to place. In Canada and in the United States, accounting regulations have been developed principally by the accounting profession itself.[5] In other countries, however, regulations have been imposed on the accounting profession through legislation.[6] The latter case is descriptive of the Mexican situation. The development of the accounting profession in Mexico has been highly influenced by government intervention. Only in recent times have private and semiprivate organizations begun to play an important role in the development of Mexican accounting standards.

The remainder of this paper discusses the affect of the national government, as well as other factors, on the accounting profession in Mexico. Several well-defined time periods are used to present this chronological development. The first period began during the second half of the nineteenth century and ended in 1910 with the start of the Mexican Revolution. The second period, from 1911 to 1958, was characterized by important changes in the education of public accountants. Finally, the period from 1959 to the present

[3] Vahe Baladouni, "The Study of Accounting History," *International Journal of Accounting* (Spring 1977), 53–67.

[4] Stephen A. Zeff, *Forging Accounting Principles in Five Countries: A History and Analysis of Trends* (Arthur Andersen & Co. Lecture Series, 1971); Edward Elliot, *The Nature and Stages of Accounting Development* (Urbana, Ill.: University of Illinois, 1968); and George Benston, "The Market for Public Accounting Services: Demand, Supply and Regulation," *Accounting Journal* (Winter 1979–80), 2–46.

[5] See, for example, Dhia D. AlHasim, "Regulation of Financial Accounting: An International Perspective," *International Journal of Accounting* (Spring 1977), 53–67; Carey, "From Technician to Professional — 1896–1936"; Murphy, "Corporate Financial Reporting"; and Zeff, *Forging Accounting Principles.*

[6] AlHasim, "Regulation of Financial Accounting"; R. J. Briston, "The Evolution of Accounting in Developing Countries," *International Journal of Accounting* (Fall 1978), 105–20; and T. S. Doupnik, "The Evolution of Financial Statement Indexation in Brazil," *The Accounting Historians Journal* (Spring 1986), 1–18.

is one in which the Mexican accounting profession has finally received national recognition, and more economic entities have begun to participate in the accounting standard-setting process.

DEVELOPMENTS FROM 1854 TO 1910

Although the first institution specializing in the teaching of accounting in Mexico was founded in 1845, the history of modern Mexican accounting begins in 1854/1855 with two important events. First, in response to complaints from several accountants concerning the inaccuracies of the accounting system used in public organizations, the Mexican government formed an accounting committee to develop the necessary rules to regulate accounting. This committee made mandatory, at least for the public organizations, the use of the double-entry system.[7] Second, a presidential decree gave graduates of the Specialized School of Commerce (SSC) preference in employment of appropriate public-sector jobs. The latter event is important because at that time the Mexican economy was in a precarious situation; an assured job was a major economic advantage.

The SSC was created by a presidential decree in 1854 under the Lopez de Santa Ana administration. Some courses offered at the SSC provide an idea of the nature of accounting education in that period: tax accounting; commercial geography; business law; financial, banking, and stock exchange operations; and maritime law. At that time, the teaching of accounting was influenced primarily by French authors. In fact, the most popular accounting book was a Spanish translation of *Simplified Bookkeeping* by a French author, Edmond Degrange. This book remained popular until the beginning of this century.

Through a decree enacted by President Benito Juarez on 2 December 1867, the SSC became the Superior School of Commerce and Administration (SSCA).[8] Because the presidential decree was issued during the 1867/1868 school year, however, historians generally consider 1868 the beginning of the SSCA.

In 1877, under the Porfirio Diaz administration, 1877-1880 and 1884-1911, Mexico issued its first Code of Laws for Commerce (the Code). This Code applied to all commercial businesses, defined as:

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[7] *La Contaduria Publica — Estudio de su Genesis y de su Evolucion Hasta Nuestros Dias* (Mexico City: Universidad Nacional Autonoma de Mexico, 1983), 108.

[8] In May 1907, Fernando Diez Barroso became the first certified public accountant to graduate from the SSCA. Diez Barroso is considered the "father of accounting in Mexico."

1. persons who, having the legal capacity to do business, enter it as his or her ordinary occupation;
2. organizations and corporations organized according to commerce laws; and
3. foreign corporations or branches engaged in commercial transactions in Mexico.

Under the Code, commercial businesses were required to record their economic transactions in at least three different books: the inventory, the journal, and the ledger. In addition, corporations were required to record all agreements reached by their boards of directors. The Code also required commercial businesses to prepare a balance sheet at least once a year, but it was silent as to the income statement.

In some cases, the Code was very specific in stating how certain transactions were to be recorded. For example, Article 36 stated that errors should be corrected exclusively by using reversing entries.[9] Article 38 stated that the capital amount should be calculated as the difference between assets and liabilities.

In 1884, the first banking law was issued and incorporated into the Code. In 1897, the law was removed from the Code and became the General Law on Credit Institutions and Auxiliary Organizations (Ley General de Instituciones de Credito y Organizaciones Auxiliares). Today this law requires companies with outstanding loans in excess of 500,000 Mexican pesos to provide creditors financial statements that have been reviewed by a certified public accountant.[10]

Between 1897 and 1903, the Mexican government granted twenty-five concessions to operate credit institutions in several parts of the country. This development in part reflects the financial bonanza and stable political environment that Mexico had during the Porfirio Diaz administration. With the development of new industrial and commercial organizations and advances in science and technology, the accounting profession obviously needed improvement. During this period, foreign investment also expanded greatly. As large transnational companies sought audits similar to those performed in their home offices, the need arose for international certified public accountant (CPA) firms residing in Mexico. In response, in 1905 and 1906, respectively, Price Waterhouse &

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[9] An acceptable alternative to correct errors in Mexico is by writing the entry in red color.
[10] At the current exchange rate of 2,300 Mexican pesos to one U.S. dollar, this would be equal to $217 U.S.

Co. and Deloitte, Plender Griffiths & Company began operations in Mexico. The establishment of these and other foreign CPA firms gradually increased the availability of American books and journals in the libraries of Mexican universities and of Mexican CPA firms. The result was a gradual erosion of the French influence on the accounting profession and the emergence of the American influence — one that became dominant.[11] The creation of new companies and the establishment of foreign CPA firms seem to have had a positive impact on the interest in accounting as a profession. An indication of this increased interest is the much larger number of accounting books published by Mexican authors between 1870 and 1903 compared with previous years.[12]

The greatly increased demand for accountants at the beginning of this century far exceeded what the educational infrastructure could produce. In response to this situation, the Secretariat of Justice and Public Instruction was divided in 1903 into two subsecretariats, one of which was the Public Instruction Subsecretariat. As a result of lobbying by this secretariat, a decree was issued in 1905 to create the professional designation of certified public accountant. This decree also introduced an interesting innovation: commerce was to be taught at two different levels — the primary, to be taught at elementary schools, with two-year curriculum, and the professional, in which the curriculum spanned three years. The required subjects at the elementary level were commercial arithmetic, bookkeeping, national language, calligraphy, typewriting and shorthand, French or English language, Mexican economic geography, and seminars dealing with commercial economics and the history of Mexico. The professional level included additional subjects such as tax accounting, algebra, financial operations, German language, universal economic geography, constitutional law, and mercantile and international law.[13]

Although theory was heavily emphasized, an important criterion used in developing the curriculum for both levels was the inclusion of pragmatic courses as much as possible. As Chavez, a top official in the Secretariat of Justice and Public Instruction, observed:

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[11] American accounting textbooks have become so popular in Mexico that many private universities now require students to buy the latest edition in English in order to keep pace with the changes in accounting practice.

[12] De La Puente Ruiz observes that only five books published by Mexican authors before 1870 are worth mentioning, whereas between 1870 and 1910 at least twelve such accounting books were written by Mexican authors. Also during that period, translations of foreign accounting textbooks, principally by American and French authors, proliferated in Mexico.

[13] *La Contaduria Publica*, 112.

Both the first level schools, as well as the secondary level schools, should organize their pragmatic courses to resemble as much as possible, all the usual operations of commercial and banking organizations.[14]

Another important achievement by the Public Instruction Sub-secretariat was the creation, in 1910, of the National University of Mexico (Universidad Nacional de Mexico), which greatly increased the national capacity to train accountants. The National University was the last big project that Porfirio Diaz finished before he was forced to resign as a result of the revolution that began 20 November 1910.

DEVELOPMENTS FROM 1911 TO 1958

The first ten years after Diaz's resignation were turbulent ones in Mexican history; three presidents ruled the country during the period 1911 to 1915. Due to an increasing number of graduates from the SSCA and from the National University of Mexico, the accounting profession was finally organized in 1917 in Mexico City, as the Association of Certified Public Accountants (Asociacion de Contadores Publicos Titulados). The objectives of this association were similar to the accounting associations then existing in other countries: to set rules of ethics and accounting principles to regulate the accounting profession. In 1923, the association changed its name to the Institute of Certified Public Accountants of Mexico (Instituto de Contadores Publicos Titulados de Mexico), and in 1925, it became a legal entity. In 1955, the name was again changed to the current one, Mexican Institute of Public Accountants (Instituto Mexicano de Contadores Publicos — MIPA).

Not until the Obregon administration (1920-1924) did the country begin to stabilize after the chaos of the Revolution. The Calles adminstration (1924-1928) built on Obregon's achievements in modernizing the country's economy.[15] During the Calles administration, the Central Bank of Mexico was founded, and the first tax law was enacted. The Calles administration also spent heavily on education and infrastructure. In a period of only three years, the federal budget for education was increased almost 50 percent.[16] One of the projects of the Ministry of Public Education resulted

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[14] Quoted in Alberto Ma Carreno, *Los Contadores Publicos en Mexico*, (Mexico, Editorial Jus, 1957, Coleccion Legislativa completa de la Republica Mexicana, Anos de 1904 y 1905).

[15] Alan Riding, *Vecinos Distantes. Un Retrato de los Mexicanos* (Planeta, Mexico: Joaquin Mortiz, 1986), 66.

[16] Enrique Krauze, *Historia de la Revolucion Mexicana, Periodo 1924–1928; La Reconstruccion Economica* (El Colegio de Mexico, 1977).

in the recognition, in 1925, of all the "non-public accountants" who had graduated before 1923 and who were then teachers in the SSCA.[17] Under the assumption that those teachers had adequate experience in accounting, the Ministry granted them certificates as public accountants. Among those teachers was Rafael Mancera, who with his brother formed the first Mexican CPA firm in 1934.

The importance given to education during the Calles administration set a precedent for later administrations.[18] New schools and state universities were created throughout the country. As the number of professions and professionals increased, the Mexican government issued in 1945 the Professional Law to regulate the practice of different professions.[19] Article 15 of this law stipulates that only Mexican citizens may practice a profession, and Article 16 states that as an exception, foreign political refugees are permtted to practice within certain limits.

The Professional Law states that before being able to practice as a public accountant, persons must register their degrees with the General Professional Bureau (Direccion General de Profesiones). This law allows practitioners of each profession to join professional associations (colegios). Chapter VI (Articles 44 through 51) of this law specifies the requirements, obligations, and rights of such colegios. Importantly, neither the colegios nor the MIPA has the authority to intervene directly in the process of authorizing public accountants to practice. This function is reserved exclusively for the universities, backed by the General Professional Bureau.[20]

In 1947, the Instituto Tecnologico de Monterrey (Monterrey Institute of Technology) became the first Mexican university granting degrees in accountancy to set a high school diploma as an admission requirement. Until that time, the accounting curriculum had required, on average, seven years beyond the elementary school diploma. Today, the high school diploma is required for admission by all Mexican universities granting the accounting degree. At least eight semesters of course work are required after the high school diploma. After completing the course work, degree candidates must present a thesis and must pass a professional

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[17] Rafael Mancera, "History of Accounting and Auditing in Mexico," *The Arthur Young Journal* (April 1962), 14–27.
[18] Krauze, *Historia de la Revolucion Mexicana.*
[19] The last version of this law (1985) regulates twenty-three different professions, including, among others, actuaries, architects, accountants, engineers, and lawyers.
[20] Luis Porragas, "Auditing Standards in Mexico," in B. E. Needles, Jr. and F. Pomeranz, eds., *Comparative International Auditing Standards* (Sarasota, Fla: American Accounting Association, 1985), 135.

examination administered by three to five faculty members. Another graduation requirement is that the candidates gratuitously render professional service to persons with a limited income, or to certain public or private entities.[21] For financial reasons, most accounting students who attend state or federal universities receive their training in CPA firms while going to school. To accommodate this training, state and federal universities generally schedule the bulk of their courses early in the morning and late in the afternoon.

Although a few private universities still grant the degree as soon as students complete the course work, this is likely to change because the Ministry of Public Education is now requiring all universities to have the same degree criteria.

As a result of the Professional Law, the Mexican College of Public Accountants (College of Accountants) was formed in 1949. According to its first president, both organizations, the Institute and the College of Accountants, have the same purposes and rule of ethics. The only difference between them is that MIPA can select which members to admit, but the College of Accountants is obliged by law to admit anyone who holds a CPA certificate and is in good standing with the General Bureau of Professions.[22]

Although the MIPA had in 1939 published a pamphlet entitled "The Certification of Balance Sheets for Purposes of Registering and Quoting Securities," not until 1955 did the MIPA attempt to represent and guide the accounting profession with the creation of the Commission on Auditing Procedures. However, as Porragas states: ". . . because of the influence of literature from abroad, the theory of auditing for attest purposes may be said to have developed in Mexico before actual practice."[23] Consequently, the first six bulletins issued by the Commission on Auditing Procedures from August 1956 to March 1957 had little or no impact on Mexican accounting practice. By 1958, a good understanding of the attest function already existed in Mexico; for example, auditors' objectives for evaluation of internal control had been established, as had the concept of limited liability in case of fraud. Regardless of the accomplishments obtained in the accounting profession during this period, however, the Mexican accounting profession lacked the importance and recognition of a solid profession.[24]

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[21] Ibid.
[22] See Rafael Mancera, "History of Accounting and Auditing in Mexico," *The Arthur Young Journal* (April 1962), 22.
[23] Porragas, "Auditing Standards in Mexico."
[24] Ibid.

DEVELOPMENTS FROM 1959 TO THE PRESENT

A presidential decree (the Decree) issued on 21 April 1959 is generally considered to be the event that gave national recognition and importance to the Mexican accounting profession.[25] The purpose of this Decree was to encourage taxpayer adherence to tax laws and to reduce unnecessary tax audits by fiscal authorities. The Decree required taxpayers with a gross income above 10 million Mexican pesos to have their financial statements certified by a certified public accountant for tax purposes. This provision was optional for taxpayers with a gross income below 10 million Mexican pesos; however, having their returns certified by a certified public accountant would allow them to avoid an audit by the fiscal authorities. Elliot comments:

> The Presidential decree specifically stated that the Treasury Department (Secretaria de Hacienda y Credito Publico) would accept the reports of certified public accountants and would make selective tests only in certain cases.[26]

Among the requirements for a certified public accountant to certify financial statements for tax purposes are the following:

1. Mexican citizenship;
2. professional title (titulo profesional);
3. professional identification card (cedula profesional), a license to practice professionally, granted by the Ministry of Public Education (a federal agency) after the professional title has been received;
4. membership in a recognized colegio; and
5. special registration with the Ministry of Finance.

Thus, the issuance of the presidential decree of 1959 greatly increased the importance of being a member of a colegio. Because of this Decree, membership in the different colegios throughout the country increased sharply. In the early days, however, most of the colegios worked independently of the MIPA; not until 1965

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[25] Other federal laws have also affected the accounting profession, more specifically the attestation function. For example, the General Law of Mercantile Companies (Ley General de Sociedades Mercantiles) states in Article 251 that all foreign corporations must publish annually a balance sheet certified by a certified public accountant. Article 4 of the Regulation of the General Law of Mercantile Companies states that companies wishing to issue new shares should present financial statements certified by a public accountant. Similar requirements are found in Articles 212 and 213 of the General Law of Titles and Credit Operations; Circular 11–11 of the National Securities Commission; and Article 89 of the Internal Regulation of the Mexican Stock Exchange.

[26] Edward, *Nature and Stages of Accounting Development.*

was the MIPA transformed into a truly representative national organization. In that year, the fifteen provincial colegios agreed to become affiliated with the MIPA, so that all present and future members of the colegios would automatically be initiated into the MIPA.[27] Today, the MIPA is a federation of professional colegios organized in nine regions with more than forty-five colegios representing approximately 10,000 members affiliated with the MIPA.

In response to the emphasis on the attest function in the 1959 Decree, the Committee on Auditing Procedures published twenty-two auditing bulletins in a period of only ten years. The Committee on Auditing Principles has continued to issue standards, albeit at a lower rate. (See Appendix A for a list of all bulletins issued by this commission through the end of 1986.)

In 1967, the 1959 Decree was derogated by Article 85 of the Federal Tax Code (Codigo Fiscal de la Federacion). Nevertheless, the certification of financial statements for tax purposes remains prevalent. The Federal Tax Code also introduced a controversial requirement. Article 85 of the Code stated that the financial statement opinion should be based on tax rules or, as an *alternative*, on generally accepted auditing standards. This requirement sparked a long debate between the MIPA and tax authorities.[28] This controversy was resolved in 1980 when the Federal Tax Code Regulation for the first time explicitly stated that the audit function, for tax purposes, should be based on generally accepted auditing standards.

According to Porragas, the MIPA formally established a Committee on Accounting Principles in 1967 as a response to a lecture on generally accepted accounting principles presented at the Institute by the president of the College of Accountants.[29] One of the reasons for the creation of this committee, according to Zeff, was to provide the internal revenue agencies with a source of accounting authority.[30] The first committee, chaired by A. Nunez Esteva, consisted of eight members, six of whom were partners in CPA firms, one of whom was a CPA from industry, and another was a full-time accounting professor. By the end of 1971, the committee had completed exposure drafts of eight proposed bulletins (accounting principles). Seven of these drafts did not become

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[27] Zeff, *Forging Accounting Principles.*
[28] Benjamin R. Tellez, *El Dictamen en la Contaduria Publica* (Mexico City: Ediciones Contables y Administrativas, 1983), 165.
[29] Porragas, "Auditing Standards in Mexico."
[30] Zeff, *Forging Accounting Principles,* 101.

generally accepted accounting principles until 1974. The one exception was Bulletin C-13, "Fixed Asset Revaluations." The MIPA, in its Circular Number 3, states that the decision on Bulletin C-13 has been deferred so that the Committee on Accounting Principles can further study and analyze the opinions and commentaries from the accounting profession. Although the circular was issued in February 1978, the committee had not made a formal decision before the end of 1986. By that date, the Committee on Accounting Principles had issued twenty-six accounting principles (see Appendix B) and twenty-eight circulars (see Appendix C).

Reading such principles reveals the tremendous U.S. influence on Mexican accounting practices.[31] For example, the Mexican accounting principles Series A were highly influenced by Accounting Principles Board (APB) Statement No. 4; Bulletin B4, "Statement of Changes in Financial Position," was almost literally translated from APB Opinion No. 19. When the process of adopting a new accounting principle in the United States takes a long time, the MIPA may adopt the principle before it becomes accepted in the United States. This was the case with the "Cash Flow Statement" standard. One year after the issuance, in November 1981, of the exposure draft on "Reporting Income, Cash Flows, and Financial Position of Business Enterprises" by the Financial Accounting Standards Board (FASB), the MIPA Committee on Accounting Principles formed a special task force to prepare an exposure draft on this topic. By the end of 1983, Bulletin B-11, "Cash Flow Statement," was officially accepted by the MIPA. Not until November 1987 did the FASB issue the statement on cash flows.

MIPA's code of professional ethics is another example of the important influence that the United States has had on the development of accounting in Mexico. The first professional ethics code in Mexico for public accountants was prepared by MIPA at the end of the 1920s. After some changes and modifications in 1955 and 1968, the actual code was issued in 1976 (see Exhibit 1). The similarity of the Mexican code to its American counterpart is apparent.

Another major variable, besides geographical proximity, that explains the heavy Mexican dependency on American practice is the lack of accounting research in Mexico. This lack of research

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[31] The first series of accounting principles was written principally by the faculty and staff of the Accounting Department of the Monterrey Institute of Technology, many of whom had graduate degrees from American universities.

Exhibit 1. Professional Ethics Concepts of the United States Embodied in the Mexican Code

Mexico
  I. Scope of the Code

 II. Responsibility to society (independence, integrity and objectivity)
      A. Independence criteria
      B. Professional work quality
      C. Professional preparation and quality
      D. Personal responsibility

III. Responsibility to the client
      A. Professional confidentiality
      B. Obligation to refuse unethical tasks
      C. Loyalty to the client
      D. Remuneration

 IV. Responsibility to the profession
      A. Respect for colleagues and the profession
      B. Dignify professional image based on quality
      C. Technical knowledge, dissemination and teaching

United States
  I. Independence, integrity, and objectivity

 II. General and technical standards

III. Responsibilities to clients
      A. Confidential client information
      B. Contingent fees

 IV. Responsibilities to colleagues

  V. Other responsibilities and practices
      A. Acts discreditable
      B. Advertising and other forms of solicitation
      C. Commissions
      D. Incompatible occupations
      E. Form of practice and name

is attributed, in part, to the considerable research being done in the United States that makes accounting research in Mexico seem redundant.[32] Another reason is the manner in which Mexican universities operate. Universities in Mexico pay very low salaries to faculty members; this creates a problem in attracting and retaining full-time faculty. Even those who decide to work as "full-time" professors must supplement their income with external consulting or even with a second job. Another reason is the way the MIPA functions. Approximately five hundred members work

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[32] Zeff, *Forging Accounting Principles*, 101.

in four normative commissions and in twenty-eight task forces. Most of these members hold full-time jobs elsewhere and are involved in the MIPA on a voluntary and free basis; the time that they can devote to serious research is therefore minimal. This situation has hindered research related to the Mexican accounting environment. Unfortunately, there are no indications that this situation will change in the near future.

As a result of the government's influence in creating the colegios and several regulatory agencies a number of organizations are actively involved today in the accounting standard-setting process. As recently as 1970, the main participants in this process were the government and the MIPA. The extraordinary growth of the Mexican securities market during the second half of the 1970s and the issuance of some controversial bulletins by the MIPA have prompted users of financial information to assume a more active role in the accounting standard-setting process. For example, Mexican corporations have been greatly affected by the require- ments imposed by the MIPA. One reason is that, regardless of size and listing status, Mexican corporations are required to follow all accounting principles. Because of the limited liability characteristic and the capital needed to establish this kind of organization (the minimum capital required to form a corporation is 25,000 Mexican pesos, equivalent to approximately \$10 (U.S.), corporations have been the most common form of business organization in Mexico. Because most of these corporations are small and/or privately held companies, the economic resources required to comply with the Mexican accounting principles may be material, making many companies consider whether the costs of complying with the accounting principles outweigh the benefits.

Mexican accounting standard setting in the current environment involves a number of major sources and parties (Exhibit 2). First, a number of federal agencies are empowered to regulate the operations of busines firms. For example, the National Banking and Insurance Commission, through the General Law of Titles and Credit Operations, oversees the operations of banks, insurance companies, mutual funds, credit unions, and so on, and, therefore, affects the way such companies record and disclose financial in- formation. These companies are represented on the Committee on Accounting Principles through the Mexican Association of Banks and can lobby for or against specific accounting standards. Another federal agency involved in accounting standard setting is the Federal Division of Fiscal Auditing (DAFF), the agency em-

Exhibit 2.
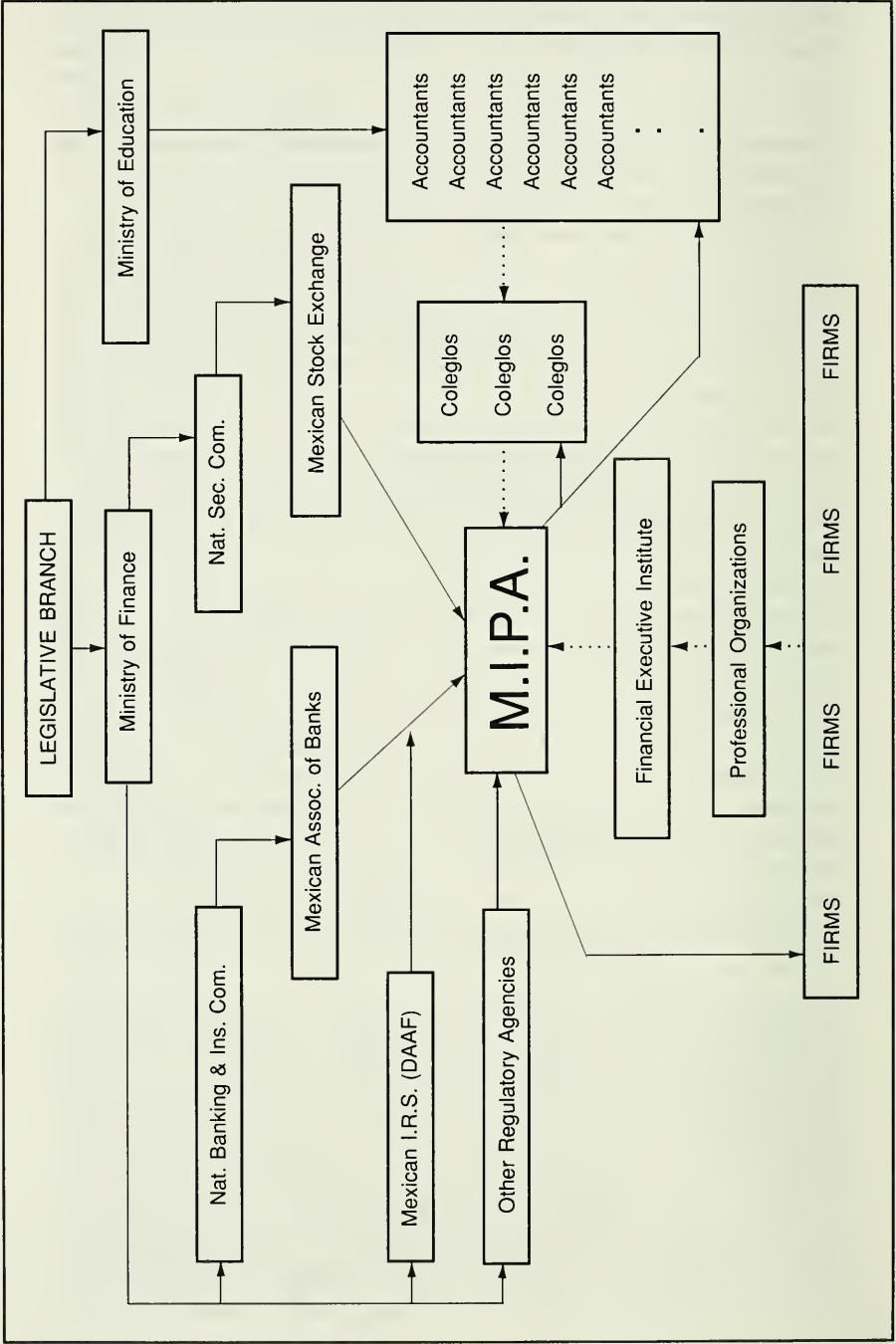
powered to enforce the fiscal obligation of corporations and individuals. As previously mentioned, by filing financial statements certified by a certified public accountant, corporations can greatly reduce the probability of lengthy audits by DAFF. In this way, DAFF exerts a strong influence on Mexican corporations' accounting practices. By far the most important regulatory agency is the National Securities Commission (the Commission), an agency within the Ministry of Finance and Public Credit; it has been assigned decision-making and enforcement powers on issues pertaining to the securities market.

Aside from the governmental agencies, a number of quasipublic and private institutions also impact Mexican accounting and disclosure practices. These include the Mexican Stock Exchange (MSE), the MIPA, the Mexican Institute of Financial Executives (IMEF), and the colegios. The MSE is the only securities exchange in Mexico. Before 1975, it was the stereotype of underdeveloped securities markets. That is, its markets were thin with little or no trading and with relatively insignificant amounts of new public issues by private corporations. Information was not adequate, and manipulation was believed to be widespread, especially for private issues.[33] The year 1975 represents a major watershed for the MSE. In this year, the Securities Market Law (SML) was enacted. As mentioned, the SML came to regulate, among other things, the activities of the entities that participate in the MSE. Article 11 of the SML requires that before securities can be publicly offered, they must be registered in the Securities Section of the National Registry of Securities and Securities Brokers. Among the requirements for obtaining this critical registration is the filing of financial statements approved by an independent certified public accountant registered in the Secretariat of Finance and Public Credit (Circular 11-11).

The corporations whose securities are traded on the MSE must periodically comply with a series of requirements imposed by the exchange. The annual requirements are, for all practical purposes, indentical to those required by the Commission. These requirements were changed drastically in 1979 when the MIPA issued Bulletin B-7, "Disclosure of Inflationary Effects on Financial Information." Before the issuance of this bulletin, Mexican corporations were accounting for the effects of inflation in many different ways. Lack of comparability, useless financial statements, liquidating

[33] U. T. Wai and H. T. Patrick, "Stock and Bond Issues and Capital Markets in Less Developed Countries," *IMS Staff Papers* (March 1973).

dividends, paper profits, and so forth were common topics used to criticize the MIPA. Bulletin B-7 requires companies to provide information of the inflationary effects on certain items of the financial statements. Specifically, companies were required to disclose the inflationary effects on inventories and cost of goods sold; property, plant and equipment; and stockholders' equity, including monetary gains/losses, and nonmonetary holding gains.

Bulletin B-7 generated so much controversy that in 1980, the Commission on Accounting Principles created different task forces to make this bulletin intelligible. These task forces were in charge of sponsoring conferences, seminars, and workshops concerning Bulletin B-7. Never in the past had a single bulletin created so much response from both the preparers and users of financial information. For the first time, many organizations expressed their opinions and ideas as to the adequacy of Bulletin B-7. The accounting profession emerged from its semilethargic state to one in which affected parties were assuming an active role in the accounting standard-setting process.

Another bulletin that contributed to this change was Bulletin B-5, "Recording Exchange Rate Transactions," which was issued in 1973 when the Mexican peso had had a fixed parity with the U.S. dollar for almost twenty years. In 1976 the Mexican peso suffered several devaluations; corporations were facing situations not contemplated in this bulletin. As a result, corporations were registering the impact of foreign currency transactions and/or translations in a variety of ways. Both the users and preparers of financial information perceived that bulletins B-5 and B-7 did not conform to the economic environment prevailing in those years.[34] In an effort to provide solutions to the treatment of certain foreign currency transactions, the MIPA issued Circular 14 in 1981 and 19 in 1983. Finally, in 1984, the MIPA superseded bulletins B-5 and B-7 with Bulletin B-10, "Recognition of Inflation Effects on Financial Information," which requires that the effects of inflation be incorporated into the basic financial statements. The reaction, both positive and negative, to this bulletin has been unprecedented. The number of articles published in *Contaduria Publica* (the official journal of the MIPA) dealing with Bulletin B-10 is impressive.[35]

[34] *Principios de Contabilidad Generalmente Aceptados* (Mexico: Instituto Mexicano de Contadores Publicos, 1987).
[35] According to a private communication from Roberto del Toro, editor of *Contaduria Publica,* approximately 25 percent of the main articles published in this journal in the last three and a half years have dealt directly with Bulletin B-10.

Since the issuance of this bulletin, workshops, conferences, and seminars dealing with Bulletin B-10 have been offered in virtually every large Mexican city.

Thanks to these bulletins, financial information users and pre-parers in Mexico have taken a more active role in the accounting standard-setting process. In recent years, Mexican certified public accountants have voiced their ideas and criticisms, or have lobbied for accounting principles through the colegios. In similar fashion, other professional organizations have provided a forum for their members to express their opinions about specific accounting principles.

One professional organization that has played an especially important role in the standard-setting process in the last decade is the Mexican Institute of Financial Executives (IMEF). Originally formed in 1961, the IMEF has had as one of its main objectives the increase of ideas and experiences among top executive officers. Since its formation, this organization has actively participated in conferences, platforms, and workshops that have provided an imput not only to the accounting profession but also to the federal government in its legislation process. Much of this organization's lobbying power comes from the mix of its membership: CEOs and CFOs of the most important Mexican firms, as well as important politicians. Although small in size (approximately 1,500 members), the IMEF is now considered by many to be the most prestigious business professional organization in Mexico.

Today, the Committee on Accounting Principles, as well as the Committee on Auditing Principles, comprises members represent-ing a variety of interests (e.g., representatives of larger Mexican CPA firms, the MSE, the Mexican Association of Banks, and the Association of Brokerage Houses). This variety in the membership indicates, in part, the different kinds of agencies interested in working with the accounting profession. The accounting and auditing principles are no longer the private preserve of the government and the accounting profession.

CONCLUSION

The Mexican accounting profession has experienced numerous changes since the middle of the last century — from a profession in which most of the changes were dictated by federal laws or decrees to a more democratic situation. Although the government still participates actively in the accounting profession, more quasi-public and private agencies are now actively involved in the

accounting standard-setting process. The current Mexican Committee on Accounting Principles has a structure similar to the defunct APB. It is not clear whether the Mexican accounting profession could benefit from following the United States in having an independent board such as the FASB. Perhaps only time will tell.

APPENDIX A. AUDITING PRINCIPLES

Series and Bulletin #	Title	Supersedes Bulletin #	Title
A	Characteristics of the Bulletins	1	Preamble
		35	Characteristrics of the Bulletins
B	General Normative Pronouncements	1	Preamble
	About the Auditor's Job	2	General Concepts*
B-02	Quality Control on the Auditing Work	—	New bulletin
C	Auditing Standards	3	Auditing Standards*
D	Pronouncements on Personal Standards	3	Auditing Standards*
E-01	Planning and Supervision on the Auditing Work	4	Audit Planning
		33	Supervision of the Audit
E-02 & H-10	Bulletin on Internal Control	5	Internal Control Evaluation
E-02	Study and Evaluation of Internal Control (modified)	—	New bulletin
E-03	Sufficient and Competent Evidence	3	Auditing Standards*
E-04	The Auditor's Responsibility in Discovering Errors and Irregularities	—	New bulletin
F-01	Auditing Procedures of General Applicability	2	General Concepts*
F-02	Selective Tests	12	Selective Tests in Auditing
F-03 & H-13	Initial Audits	23	Problems in Initial Audits*
F-04	Completing the Audit	25	Client's Letter of Confirmation to the Auditor

APPENDIX A. (Continued)

Series and Bulletin #	Title	Supersedes Bulletin #	Title
F-05	Methodology to Study & Evaluate Internal Control	—	New bulletin
F-06	Effects of Electronic Processing	—	New bulletin
F-07	Auditing Procedures to Study and Evaluate the Internal Auditing Function	—	New bulletin
F-08	Utilization of the Work of a Specialist	—	New bulletin
F-10	Communication between the Actual and Previous Auditors	—	New bulletin
G-01	Tests of Cash	7	Tests of Cash and Banks
G-02	Temporary Investments in Securities	14	Temporary Investments in Securities
G-03	Accounts Receiveable	6	Tests of Accounts and Notes Receiveable
		32	Confirmation in Examining the Financial Statements
G-04	Inventories	8	Tests of Inventories
G-05	Prepaid Expenses	—	New bulletin
G-06	Property, Plant, and Equipment	11	Tests of Property, Plant, and Equipment
G-07	Audit Procedures on Disclosure of the Inflation Effects on Financial Information	—	New bulletin
G-08	Intangibles	20	Tests of Intangibles
G-09	Liabilities	13	Tests of Liabilities
		18	Participation of Workers in the Company's Profits
G-10	Owners' Equity	19	Tests of Owners' Equity
G-11	Sales and Cost of Goods Sold	9	Tests of Sales and Cost of Goods Sold
G-12	Operating Expenses	10	Tests of Operating Expenses
G-13	Tests on Contingencies and Obligations	17	Tests of Contingencies

APPENDIX A. (Continued)

Series and Bulletin #	Title	Supersedes Bulletin #	Title
G-14	Subsequent Events	34	Responsibility of the Auditor on Subsequent Events
G-15	Tests of Payroll	—	New bulletin
G-20	Auditing Procedures Applicable to Financial Statement Items that Recongnize the Effect of Inflation on the Financial Information	—	New bulletin
H-01- H-06, H-12, H-17 &	Auditor's Report	21	The Report on Financial Statements
H-19		31	The Report on the Statement of Changes in Financial Position
		36	A New Report on Financial Statements
H-07	Long Report	—	New bulletin
H-08	Report of the Public Accountant on Pro Forma Financial Statements	24	The Report of the Public Accountant on Pro Forma Financial Statements
H-09 & G-16	Review & Report on Interim Financial Statements	27	Responsibility of the External Auditor
H-11	Repercussion of Disclosing the Effects of Inflation on Financial Information on the Auditor's Report	—	New bulletin
H-14 & G-17	Utilization of Other Auditor's Reports as a Basis for the Review of Consolidated or Combined Financial Statements and Evaluation of Long Term Investments	29	Utilization of the Reports of Others
H-15	Use of the Name of the Public Accountant with Non-Audited Financial Statements	—	New bulletin
H-16	Published Financial Statements	22	The Auditor and the Publication of Financial Statements

APPENDIX A. (Continued)

Series and Bulletin #	Title	Supersedes Bulletin #	Title
H-20	Notes to the Financial State-ments	—	New bulletin
H-21 & H-22	Professional Opinions of the Public Accountant different than the Audit Report	30	Professional Opinions of the Public Accoun-tant different than the Audit Report
H-23	Report of Financial Statements of Pre-Operating Stage Com-panies	—	New bulletin
H-24	Effects of Contingencies	—	New bulletin
H-25	Report on Internal Control	—	New bulletin
H-26	The Auditor's Report on the Performance of the "Comisa-rio"	—	New bulletin
H-27	Repercussion on the Auditor's Report from Recognizing the Inflationary Effects on the Fi-nancial Information	—	New bulletin
J-01	Guide to Study the Internal Control of the Revenue Cycle	—	
J-02	Guide to Study the Internal Control of the Purchases Cycle	—	New bulletin
J-03	Guide to Study the Internal Control of the Production Cycle	—	New bulletin

* Partially amended.

APPENDIX B. ACCOUNTING PRINCIPLES

Series A: Basic Accounting Principles	Effective date
Framework of the Basic Theory of Financial Ac-counting	January 1974
Entity	October 1975
Realization and Accounting Period	September 1975
Full Disclosure	July 1974
Materiality	October 1981
Consistency	July 1974

APPENDIX B. (Continued)

Series A: Basic Accounting Principles	Effective date
Series B: Principles related to financial statements	

Objectives of Financial Statements	
Statement of Changes in Financial Position[1]	October 1981
Recording of Foreign Exchange Transactions[2]	July 1974
Disclosure of the Inflation Effects on Financial Information[3]	January 1980
Consolidated Financial Statements and Valuation of Long Term Investments	March 1976
Interim Financial Statements	January 1983
Recognizing Inflation Effects on Financial Information	December 1984
Cash Flow Statement	December 1983

Series C: Specific application accounting principles	
Cash	January 1974
Temporary Investments	April 1982
Accounts Receivable	July 1974
Inventories	January 1974
Prepaid Expenses	October 1981
Property, Plant, and Equipment	July 1974
Intangibles	April 1976
Liabilities	January 1984
Owners' Equity	April 1976
Contingencies and Obligations	January 1974

Series D: Accounting principles related to special problems in determining operating results	
Accounting Treatment for Salaries and Wages	July 1974
Accounting Treatment for Income Taxes and Workers Participation in the Company's Profits	December 1987

[1] Superseded by Bulletin B-11; however, its definitions and classifications are still valid.
[2] Superseded by Bulletin B-10 starting with companies whose accounting periods end December 31, 1984.
[3] Superseded by Bulletin B-10 starting with companies whose accounting periods end December 31, 1984.

APPENDIX C. SUMMARY OF CIRCULARS ISSUED BY THE COMMITTEE ON ACCOUNTING PRINCIPLES AS OF DECEMBER 1986

Interpretation of accounting principles		14
Still Effective (17, 22, 27)	3	
Superseded (1, 2, 4, 5, 12, 14, 18, 19, 23, 25, 26)	11	
Recommendations on topics not listed in the bulletins		6
Still Effective (8, 15, 21, 28)	4	
No longer applicable (6, 7)	2	
Informative		8
Tables for restatement purposes		
Still effective (9, 10, 13, 16, 20, 24)	6	
No longer applicable (3, 11)	2	
TOTAL		28

Note: The numbers in the parentheses refer to the circular number.

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Evidence of International Harmonization of Financial Reporting

TIMOTHY S. DOUPNIK*

Harmonization of financial reporting is the process by which differences in financial reporting practices among countries are reduced. The perceived benefits of harmonization include greater comparability of the financial statements of firms in different countries for investment and credit analysis, easier consolidation of foreign accounts for multinational enterprises, easier access to foreign capital markets for business enterprises, and greater staff mobility in public accounting firms.[1]

The harmonization of accounting standards on an international basis has been discussed since the late 1950s when Kraayenhof proposed the establishment of multinational accounting standard-setting committees.[2] His proposal was realized in 1973 when the professional accounting bodies of nine countries formed the International Accounting Standards Committee (IASC). Today, more than sixty countries are affiliated with the IASC, which has promulgated more than twenty-six statements of international accounting standards. The IASC has no authoritative power to force countries to use its standards, but it recommends accounting practices and procedures that should be used on a worldwide basis.

Other international organizations have become interested in the harmonization process. The United Nations appointed a Group of

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[1] C. Nobes and R. Parker, eds., *Comparative International Accounting* (Homewood, Ill.: Richard D. Irwin, 1981), 330–31.

[2] J. Kraayenhof, "International Challenges for Accounting," *Journal of Accountancy* (January 1960), 34–38.

Experts on International Standards of Accounting and Reporting in 1976; the Organization for Economic Cooperation and Development organized a permanent Working Group on Accounting Standards in 1979. These groups appear to be willing to operate in a review and advisory capacity rather than to establish formal standards.

On a regional basis, the European Economic Community (EEC) has approved two directives intended to reduce the difference in accounting procedures among its member nations.[3] Several regional accounting associations, such as the Nordic Federation of Accountants and the Association of Southeast Asian Nations (ASEAN) Federation of Accountants, have also been involved in the development of regional accounting standards.[4]

RESEARCH QUESTION

The considerable effort expended in recent years to achieve international harmonization, especially by the IASC and the EEC, leads to the following research question: How much harmonization has occurred since the establishment of the IASC in 1973?

The answer to this question should be useful to those who presumably would benefit from harmonization (investors, creditors, businessmen, and public accounting firms), as well as those who are involved in the harmonization efforts of international organizations.

An additional relevant question in the harmonization process is the following: Has the quality of financial reporting internationally improved?

These questions are addressed in the present study by grouping thirty-six countries according to their respective degrees of commonality on seventy accounting practices at two points in time and then by examining the stability of these groups of countries during a specific time period. Principal components factor analysis is employed to group countries.[5] It is argued that either a decrease

[3] The EEC's Fourth Directive [1978] prescribes both measurement procedures and disclosure practices for published financial statements; the Seventh Directive [1983] addresses the issue of consolidated financial statements.

[4] F. D. S. Choi and G. G. Mueller, *International Accounting* (Englewood Cliffs, N.J.: Prentice-Hall, 1984), 496–500.

[5] Factor analysis has been used by W. Frank, "An Empirical Analysis of International Accounting Principles," *Journal of Accounting Research* (Autumn 1979), 593–605; R. Nair and W. Frank, "The Impact of Disclosure and Measurement Practices on International Accounting Classifications," *The Accounting Review* (July 1980), 426–50; and R. Nair, "Empirical Guidelines for International Accounting Data," *Journal*

in the number of groups over time or an increase in the number of countries falling into one group provides evidence of harmonization. Harmonization could also be demonstrated if increases in the commonality of accounting practices between groups (as measured by interfactor correlations) exist over time.

Quality of financial reporting is measured by determining the extent of compliance with IASC standards. The use of IASC standards as an international measure of quality is debatable. More than sixty countries are represented on the IASC; no other accounting standard-setting body has such a broad representation. In the absence of another, more defensible measure of quality, the use of IASC standards seems reasonable.

PREVIOUS RESEARCH

Very little empirical work has attempted to assess the degree of harmonization that has occurred since various organizations have become interested in this topic. Rundfelt reviewed recent developments in European accounting as affected by EEC directives.[6] He chose three currently important issues: currency translation, deferred taxes, and inflation accounting; he also reviewed current debate and practices in several European countries. Without supplying any evidence to support his claim, he concluded that "the EEC directives have brought about a certain degree of harmonization of accounts that hardly could have been achieved in any other way."[7]

In an attempt to assess the influence that IASC standards have had on harmonization, Evans and Taylor examined the impact that five early IASC standards had on financial reporting in five countries.[8] Their analysis was based upon nine or ten financial statements for each country for the years 1975 through 1980. They concluded that "the IASC has had very little impact on the accounting practices of the countries surveyed."[9] This conclusion is suspect because of the difficulty in generalizing for the country as a whole based on the information of ten firms.

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of International Business Studies (Winter 1982), 85–87, to group countries according to common accounting practices. Nair and Frank [1980, p. 449] suggested the possibility of using factor analysis as a tool for evaluating the success of harmonization efforts.

[6] R. Rundfelt, "Views from Abroad: Europe," *Journal of Accounting, Auditing, and Finance* (Spring 1985), 151–56.

[7] Ibid., 155.

[8] T. Evans and M. Taylor, " 'Bottom Line Compliance' with the IASC: A Comparative Analysis," *International Journal of Accounting* (Fall 1982), 115–28.

[9] Ibid., 126.

Choi and Bavishi used annual reports from 1980 to determine whether certain accounting practices are used internationally.[10] Their study encompassed thirty-two accounting practices in twenty-three countries and was based upon fewer than ten annual reports in eight of those countries. They concluded that fundamental differences in national accounting principles are not substantial. Because their study was based upon data at only one point in time, they did not attempt to assess the amount of harmonization that has occurred over time. Moreover, the extent to which the small sample of firms in these countries accurately reflects whether firms as a whole in that country are using a particular accounting practice is questionable.

Other studies appearing in previous issues of this journal (e.g., Nobes and Parker,[11] Fitzgerald,[12] and McComb[13]) have cited major differences in accounting and have speculated as to the reasons for these differences without specifically addressing the issue of how much harmonization has already occurred.

Price Waterhouse Surveys

Price Waterhouse (PW) has conducted three surveys of international accounting practices: 1973 (thirty-eight countries), 1975 (forty-six countries), and 1979 (sixty-four countries).[14] These surveys asked PW international personnel to indicate the extent to which certain accounting practices were followed in their country.

In four separate studies, Frank and Nair used the data generated by the PW surveys to examine the degree of commonality in accounting practices among countries.[15] In three of these studies,

[10] F. D. S. Choi and V. Bavishi, "International Accounting Standards: Issues Needing Attention," *Journal of Accountancy* (March 1983), 62–68.

[11] C. Nobes and R. Parker, "Harmonization of Accounting within the European Communities: The Fourth Directive on Company Law," *International Journal of Accounting* (Spring 1980), 1–16.

[12] R. Fitzgerald, "International Harmonization of Accounting and Reporting," *International Journal of Accounting* (Fall 1981), 21–32.

[13] D. McComb, "International Accounting Standards and the EEC Harmonization Program: A Conflict of Disparate Objectives," *International Journal of Accounting* (Spring 1982), 35–48.

[14] Price Waterhouse International, *Accounting Principles and Reporting Practices* (London: PWI, 1973); *Accounting Principles and Reporting Practices* (London: PWI, 1975); *International Survey of Accounting Principles and Reporting Practices* (London: PWI, 1979).

[15] Frank, "International Accounting Principles"; Nair and Frank, "International Accounting Classifications"; Nair, "International Accounting Data"; and R. Nair and W. Frank, "The Harmonization of International Accounting Standards, 1973–1979," *International Journal of Accounting* (Fall 1981), 61–77.

the PW data were used as input into factor analysis; countries were assigned to the factor on which they had the highest degree of association to form groups of countries with common accounting practices. For example, using the 1973 data, Frank identified four distinct groups of countries that he characterized as forming four distinct models of accounting: British, American, Continental European, and Latin American.[16] Nair and Frank dichotomized the 1975 PW data into those accounting practices reflecting measurement procedures and those reflecting disclosure requirements; separate factor analyses were performed for each subset. They found that groups of countries based upon measurement procedures differed from groupings based upon disclosure requirements.[17] Nair updated the 1980 study using the 1979 PW data and found similar results.[18] Frank and Nair did not examine the issue of harmonization in these studies.

In a fourth study, Nair and Frank used the PW data to determine the number of practices to which a majority of countries adherred in 1973, 1975, and 1979.[19] They examined 131 practices for thirty-seven countries. They found that the number of practices agreed upon by a majority of countries increased from 8 in 1973 to 49 in 1979 and that the topics on which the IASC had issued pronouncements were related to the practices on which harmonization was detected.

Nobes criticized Frank's use of the PW data to classify countries' accounting systems into groups on three points:

1. Some of the responses made by Price Waterhouse personnel were in error,
2. Some of the concepts (e.g., conservatism) examined have different meanings in different countries, and
3. Equal weighting of each question distorts its relative importance.[20]

Nobes concluded, however, that "these problems appear not to be too serious for Frank's analysis, mainly because his results are so appealing. Whatever errors exist are probably minor and unsystematic."[21]

[16] Frank, "International Accounting Principles," 596.
[17] Nair and Frank, "International Accounting Classifications," 436.
[18] Nair, "International Accounting Data," 96.
[19] Nair and Frank, "International Accounting Standards."
[20] C. Nobes, "An Empirical Analysis of International Accounting Principles: A Comment," *Journal of Accounting Research* (Spring 1981), 268–70.
[21] Ibid., 270.

METHODOLOGY

To address the research questions, the data generated by PW in 1975 were used and a portion of that survey to 1983 was upated to be able to compare data for the two periods. The first IASC standard did not become effective until 1 January 1976, so 1975 represents a time before the IASC had any impact on the harmonization of financial reporting practices.

A total of 264 propositions was included in the 1975 PW survey. Many of these were redundant in terms of the information provided. For example, seven propositions were used to determine the method used to cost inventory.[22] A subset of seventy propositions was chosen from the 1975 survey to include the more basic propositions related to a particular accounting practice. For example, of five propositions related to earnings per share (EPS), only the one that asks whether "basic (primary) earnings per share are disclosed in the financial statements" was included. This approach not only mitigated the problem mentioned by Nobes of assigning equal weights to a number of propositions related to a single practice but also ensures that the assessment of harmonization is based upon a very basic core of accounting practices. If harmonization has not yet been achieved on the disclosure of primary EPS, it is extremely unlikely that harmonization has been realized in disclosing fully diluted EPS.

The major criteria used for selection of propositions were the elimination of redundancy and the exclusion of those items that a high percentage of countries found "not applicable." For example, propositions related to income taxation were "not applicable" to Bermuda and the Bahamas because these countries do not have corporate income taxation. Preference was also given to those practices that had been addressed in IASC standards as of 1 January 1983. Approximately two-thirds of the propositions selected have been recommended by the IASC (these are presented in the Appendix).

Survey questionnaires were mailed to the managing partners of PW offices in the forty-six countries included in the 1975 survey. Using a five-point Likert scale, each respondent was asked to indicate the extent to which a particular accounting practice was used in his or her country. Responses ranged from "required" to "not permitted." Questionnaires were completed for thirty-six countries. The data base consists of information on a common set

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[22] Price Waterhouse International, *Accounting Principles* [1975], propositions 92–98.

of seventy financial reporting practices for the same thirty-six countries at two points in time: 1975 and 1983.

The data were used as input into two separate factor analyses; countries were assigned to the factor on which they had the highest loading to form groups of countries with similar accounting practices.[23] Being assigned to the same group does not indicate identical accounting practices. In fact, a great deal of variation can exist within a group. Group assignment merely indicates that the countries in a particular group have more in common with one another than with countries in other groups.

In each of their studies, Frank and Nair employed an orthogonal rotation of initial factors to arrive at a simplified factor structure. Orthogonal rotation assumes that the underlying factors are uncorrelated, implying that the various groups of countries have nothing in common. This assumption obviously does not hold. For example, in 1983, thirty-two of the thirty-six countries indicated that departures from the consistency principle must be disclosed; data for thirty-one countries indicated that the effect of a departure from the consistency principle must be disclosed.

Oblique rotation relaxes the restrictive assumption and allows factors to be correlated. Because common practices between countries do exist, an oblique, rather than an orthogonal, rotation was used in the present study.[24] In addition to reflecting a more realistic situation, the use of oblique rotation has the added advantage that the degree of correlation between factors can be measured. Thus, harmonization can be assessed not only by changes in group affiliation but also by changes in interfactor correlations.

RESULTS OF FACTOR ANALYSIS

1975 Data

The rotated factor pattern matrix for the 1975 data is presented in Exhibit 1. Assigning each country to the factor on which it has the highest loading results in six groups (see Exhibit 2).[25] The

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[23] Only those factors whose eigenvalues exceeded 1.0 were considered in extracting initial factors.

[24] See J. Kim, "Factor Analysis," in H. H. Nie et al., *SPSS: Statistical Package for the Social Sciences*, 2nd. ed. (New York: McGraw Hill, 1975), 473.

[25] Orthogonal rotation of the 1975 PW data results in the same groupings as the oblique rotation. A direct comparison with Nair and Frank's results in "International Accounting Classifications" to determine whether the current results are consistent with PW data is not possible because they dichotomized practices into measurement and disclosure. However, the composition of the groups in this study is intuitively appealing.

Exhibit 1. Rotated Factor Pattern Matrix (1975 Data)

Country/factor	1	2	3	4	5	6
Singapore	0.834*	0.115	-0.173	-0.067	-0.036	0.102
Jamaica	0.793*	0.241	0.006	-0.046	-0.133	0.072
Ireland	0.792*	-0.143	0.106	0.168	0.010	-0.338
Zimbabwe	0.788*	0.079	-0.084	0.020	-0.035	-0.120
Australia	0.750*	0.106	-0.020	-0.013	-0.044	0.142
The United Kingdom	0.720*	-0.096	0.074	0.144	-0.075	-0.222
Malaysia	0.675*	-0.235	0.125	0.050	0.196	0.128
Kenya	0.651*	-0.048	0.183	-0.052	0.154	0.277
Canada	0.557*	-0.016	0.117	0.498	-0.022	-0.058
South Africa	0.543*	0.178	-0.175	-0.009	0.241	-0.155
Bermuda	0.531*	-0.014	0.067	0.385	-0.025	0.047
The Netherlands	0.502*	0.099	-0.194	0.145	0.094	-0.043
Bolivia	0.091	0.779*	0.216	0.003	0.052	-0.179
Argentina	0.098	0.769*	-0.044	0.127	0.146	-0.045
Uruguay	0.138	0.730*	0.095	0.026	-0.088	-0.052
Peru	0.204	0.676*	-0.177	-0.045	0.154	-0.010
Panama	0.036	0.644*	-0.076	0.285	-0.276	0.309
Colombia	0.162	0.626*	0.189	0.068	-0.216	0.087
Paraguay	0.111	0.573*	0.415	0.139	0.203	-0.099
Chile	0.159	0.506*	0.160	-0.144	0.073	-0.012
Brazil	0.039	0.490*	0.184	-0.104	0.230	-0.042
India	0.288	0.435*	0.197	-0.054	-0.049	0.247
Zaire	0.128	0.026	0.837*	0.052	-0.107	-0.035
Belgium	0.063	0.061	0.642*	-0.055	0.040	0.040
Greece	-0.116	-0.027	0.567*	0.115	0.038	0.019
Spain	-0.118	0.424	0.559*	-0.269	-0.105	-0.076

* Indicates highest factor loading

Exhibit 1. (Continued)

Country/factor	1	2	3	4	5	6
France	0.070	0.048	0.496*	-0.023	0.096	0.067
Italy	-0.265	0.070	0.418*	0.100	0.162	0.111
The United States	0.253	-0.009	-0.067	0.786*	-0.206	0.123
Japan	-0.081	0.093	0.083	0.599*	0.088	0.480
Mexico	0.277	0.163	0.003	0.550*	0.188	-0.001
Sweden	0.031	0.042	0.030	-0.018	0.840*	0.105
Denmark	0.268	-0.108	0.152	-0.143	0.570*	0.193
Norway	0.016	0.199	0.101	0.030	0.405*	0.274
Switzerland	-0.122	-0.128	0.079	0.118	0.136	0.739*
West Germany	0.019	0.167	-0.167	0.188	0.322	0.466*

* Indicates highest factor loading

Exhibit 2. Country Groups and Interfactor Correlations (1975 Data)

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Australia	Argentina	Belgium	Japan	Denmark	Germany
Bermuda	Bolivia	France	Mexico	Norway	Switzerland
Canada	Brazil	Greece	The United States	Sweden	
Ireland	Chile	Italy			
Jamaica	Colombia	Spain			
Kenya	India	Zaire			
Malaysia	Panama				
The Netherlands	Paraguay				
Singapore	Peru				
South Africa	Uruguay				
The United Kingdom					
Zimbabwe					

Interfactor correlation coefficients

	1	2	3	4	5	6
1	1.0					
2		.34	1.0			
3		.06	.46	1.0		
4		.24	.17	-.14	1.0	
5		.32	.34	.29	.12	1.0
6		.13	.30	.18	-.09	.09	1.0

composition of these groups suggests the following characterizations:

Group 1: British Commonwealth Group
Group 2: South America Group
Group 3: Southern Europe Group
Group 4: Japan-Mexico-United States Group
Group 5: Scandinavia Group
Group 6: Germany Group

Only Group 4 does not lend itself to simple characterization.

The interfactor correlations reported in Exhibit 2 provide a means to assess the extent to which each group of countries shares accounting practices in common with the other groups. The largest correlation exists between Groups 2 and 3 — the South America and Southern Europe groups. This is the only interfactor correlation exceeding a value of .35.

Of the seventy financial reporting practices included in the survey, forty-seven have been addressed by the IASC — thirty-two are disclosure items and fifteen are measurement procedures.[26] The extent of compliance with these standards is used as a proxy for quality of financial reporting to determine how the quality of financial reporting differs among the various groups.

Weighted-average scores have been calculated for each country for the subset of IASC disclosure requirements and the subset of IASC measurement procedures using the following weights:

Response	Weight
Required	4.00
Majority practice	3.00
About half	2.50
Minority practice	2.00
Not found in practice	1.00
Not permitted	0.00

(See Exhibit 3 for mean scores for each group of countries.)

Disclosure scores are higher than measurement scores for all groups except for the Southern Europe group (Group 3). The Japan-Mexico-United States group (Group 4) has the highest score for both subsets of financial reporting practices, followed by the

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[26] Using the criterion developed by Nair and Frank, "Intenational Accounting Classifications," measurement procedures are those accounting practices that have the capacity to affect an account balance. All other practices are considered to be disclosure items.

Exhibit 3. Mean Scores on IASC Items
(1975 Data)

	Group					
	1	2	3	4	5	6
IASC disclosure	3.55	2.84	2.00	3.74	2.75	2.87
IASC measurement	2.93	2.18	2.24	3.55	2.33	1.98
Weighted average	3.35	2.63	2.08	3.68	2.62	2.59

* Indicates highest factor loading

British group (Group 1). These scores suggest that these two groups had higher quality financial reporting practices than the other groups, even before the advent of IASC standards. The Germany group (Group 6) exhibits the lowest score for measurement practices, and the Southern Europe group (Group 3) exhibits the lowest score for disclosure items. This latter group had the lowest overall quality of financial reporting in 1975, based on the definition of quality previously discussed.

1983 Data

The rotated factor pattern matrix for the 1983 data is reported in Exhibit 4. Assigning each country to the factor on which it had the highest loading resulted in six groups (see Exhibit 5).

These groups can be characterized as being predominantly the following:

Group 1: British Commonwealth Group
Group 2: South America/Southern Europe Group
Group 3: Japan-Panama-United States Group
Group 4: Canada-Mexico Group
Group 5: Scandinavia Group
Group 6: Germany Group

The major changes from 1975 are that the South America and Southern Europe groups have merged (into Group 2), and that Canada and Bermuda, along with Mexico, form a new group (Group 4). The British Commonwealth characterization for Group 1 is not as strong as in 1975, nor is the Scandinavian characterization for Group 5.

Five interfactor correlations exceed a value of .35 in 1983 (see Exhibit 5). The British group (Group 1) is highly correlated with all groups other than Group 6. The largest single correlation occurs between the South America/Southern Europe and Scan-

dinavia groups (Groups 2 and 5). The Germany group (Group 6) appears to have the least in common with other groups of countries. The two groups with the largest interfactor correlation in 1975 (South America and Southern Europe) have been merged to form one group in 1983.

Mean scores for responses to IASC items in the 1983 group are reported in Exhibit 6. Direct comparison with 1975 scores is tenuous because of changes in group composition. To make a comparison with the South America/Southern Europe group (Group 2), the scores from the separate South America and Southern Europe groups in 1975 must be combined. The Canada-Mexico group in 1983 (Group 4) has no counterpart in 1975 data; therefore, no comparison is possible. Excluding Group 4, the highest total scores are registered by the British Commonwealth (Group 1) and the Japan-Panama-United States (Group 3) groups. The total score for this latter group has declined from 1975. This is explained by the fact that in 1975 Mexico had higher scores than Panama had in 1983. Substantial increases in both disclosure and measurement scores have occurred for the Scandinavia (Group 5) and South America/Southern Europe (Group 2) groups since 1975.[27] The Germany group has declined in quality level, both on disclosure and measuement items, since 1975.

EVIDENCE OF HARMONIZATION

It was argued that harmonization could be empirically demonstrated either through (1) a decrease in the number of groups or an increase in the number of countries falling into one group, or (2) an increase in the magnitude of interfactor correlation coefficients. The number of groups of countries did not change from 1975 to 1983. However, two 1975 groups have merged in 1983, indicating an increase in harmonization between them. The emergence of a Canada-Mexico group in 1983 indicates that some divergence has occurred between Canada and the other Commonwealth countries and that Mexican accounting practices in 1983 are more similar to Canadian than to American practices.

Other than the addition of the Southern Europe countries to the 1975 Group 2, no group from 1975 exhibits a substantial change in the number of countries composing it. Thus, based upon an analysis of the number of groups and their composition, it can

[27] The 1983 South America/Southern Europe scores (disclosure, 3.20; measurement, 2.72) should be compared with the weighted average combined scores for the two groups in 1975 (disclosure, 2.53; measurement, 2.20).

Exhibit 4. Rotated Factor Pattern Matrix (1983 Data)

Country/factor	1	2	3	4	5	6
Malaysia	0.949*	0.019	0.048	-0.158	-0.071	-0.123
South Africa	0.891*	-0.068	0.069	-0.071	0.005	-0.065
Singapore	0.880*	0.052	0.069	-0.002	-0.024	-0.142
Ireland	0.750*	-0.031	0.015	0.263	0.077	-0.030
Kenya	0.697*	-0.057	-0.128	0.110	0.167	-0.022
Zimbabwe	0.675*	0.004	0.015	0.275	0.032	0.097
The Netherlands	0.651*	-0.135	-0.065	0.208	0.211	-0.067
France	0.625*	0.163	0.196	0.064	-0.197	0.039
Chile	0.600*	0.167	0.108	0.019	-0.065	-0.055
Australia	0.598*	0.128	-0.025	-0.001	0.142	0.038
The United Kingdom	0.582*	-0.031	-0.150	0.400	0.150	-0.073
Paraguay	0.006	0.807*	-0.005	0.019	-0.014	-0.009
Belgium	0.063	0.805*	-0.046	0.079	-0.124	0.332
Zaire	-0.067	0.800*	-0.064	0.061	0.135	0.180
Uruguay	0.041	0.738*	0.132	-0.035	0.078	0.066
Italy	-0.018	0.712*	0.046	-0.085	0.067	-0.094
Peru	0.195	0.694*	-0.174	0.032	0.056	0.254
Spain	0.016	0.661*	-0.220	-0.101	0.082	-0.277
Bolivia	-0.125	0.647*	0.333	0.145	0.057	-0.037
India	0.116	0.622*	-0.279	0.056	-0.027	0.246
Brazil	0.115	0.568*	0.200	0.247	-0.136	-0.300
Colombia	0.014	0.537*	0.232	-0.114	-0.036	0.128
Greece	-0.059	0.517*	-0.092	-0.012	-0.067	0.011
Norway	-0.004	0.382*	0.262	-0.127	0.377	0.188
Argentina	0.259	0.323*	0.196	0.009	0.309	-0.025
Japan	-0.146	-0.141	0.787*	0.193	0.147	0.289
Panama	0.212	0.022	0.665*	-0.094	0.019	-0.064

Exhibit 4. (Continued)

Country/factor	1	2	3	4	5	6
The United States	0.288	−0.214	0.555*	0.414	−0.228	0.287
Canada	0.323	0.041	0.069	0.690*	−0.070	0.021
Bermuda	0.296	0.003	0.013	0.671*	0.065	−0.022
Mexico	0.035	0.042	0.364	0.421*	0.320	−0.196
Sweden	0.086	0.042	0.058	0.034	0.771*	−0.038
Denmark	0.136	0.227	0.060	0.082	0.550*	0.057
Jamaica	0.428	0.022	−0.081	0.021	0.499*	0.081
Switzerland	−0.274	0.320	0.202	0.014	0.029	0.572*
West Germany	0.295	0.020	0.376	−0.289	0.323	0.388*

Exhibit 5. Country Groups and Interfactor Correlations (1983 Data)

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Australia	Argentina	Japan	Bermuda	Denmark	Germany
Chile	Belgium	Panama	Canada	Jamaica	Switzerland
France	Bolivia	The United States	Mexico	Sweden	
Ireland	Colombia				
Kenya	Greece				
Malaysia	India				
The Netherlands	Italy				
Singapore	Norway				
South Africa	Paraguay				
The United Kingdom	Peru				
Zimbabwe	Spain				
	Uruguay				
	Zaire				

Interfactor correlation coefficients

	1	2	3	4	5	6
1	1.0	.40	.38	.39	.47	.06
2		1.0	.30	.15	.52	.06
3			1.0	.19	.27	-.06
4				1.0	.21	.08
5					1.0	.15
6						1.0

Exhibit 6. Mean Scores on IASC Items
(1983 Data)

	Group					
	1	2	3	4	5	6
IASC disclosure	3.80	3.20	3.55	3.81	3.56	2.74
IASC measurement	3.60	2.72	3.55	3.80	3.22	1.93
Weighted average	3.74	3.05	3.55	3.81	3.45	2.48

be concluded that increased harmonization has occurred only between the South America and Southern Europe groups of countries over the period 1975 to 1983.

In general, interfactor correlations have increased from 1975 to 1983. Of fifteen possible two-way correlations, only one exceeded a value of .35 in 1975, whereas five exceed this magnitude in 1983. There are increases in correlation between the British and South America/Southern Europe groups, the British and Japan-United States groups, the British and Scandinavia groups, and the South America/Southern Europe and Scandinavia groups. Only the Germany group has widespread declines in the level of correlation with the other groups. These results are consistent with the results of the comparison of mean IASC scores, which showed that the South America/Southern Europe and Scandinavia groups have significantly increased the quality of financial reporting over the period 1975 to 1983, moving in the direction of the British group, whereas the Germany group has decreased in level of quality, indicating a move in the opposite direction.

LIMITATIONS

Several limitations must be considered when evaluating the results of this study. Nobes has suggested that the PW data may include errors and that certain terms may have different meanings in different environments. The same is true for the 1983 data gathered for this study. However, the groupings in this study are intuitively appealing, and Nobes' conclusion that whatever errors exist are probably minor and unsystematic was invoked.

An additional problem with a longitudinal study using survey data is that the same individuals may not have responded to both the 1975 and the 1983 survey and that differences over time may therefore be a result of the different perceptions of different respondents rather than actual changes in usage in a given country.

The seventy propositions selected do not address all aspects of financial reporting. However, the propositions selected do represent a broad range of accounting measurement and disclosure issues.

This study has not attempted to determine the areas in which the greatest (least) amount of harmonization has occurred. Nor has there been an attempt to determine why certain countries fall into specific groups or why practices between countries are different. These are interesting issues that could be pursued in future research.

CONCLUSIONS

The results of this study indicate that, for the most part, differences in financial reporting among countries have decreased and that the quality of financial reporting on an international level, as measured by compliance with IASC standards, has improved over the period 1975 to 1983. The only exception to this is the group comprising West Germany and Switzerland.

Although evidence of harmonization exists, substantial differences persist among countries within a group, and more importantly, among countries in different groups. Users of corporate financial statements must continue to exercise caution in making comparisons between business enterprises in different countries, especially between countries found to follow different models of financial reporting. Moreover, companies interested in providing financial reports to foreign audiences should continue to be encouraged to reconcile differences between financial reporting practices employed in the home country and those with which the foreign reader is familiar.

APPENDIX. ACCOUNTING PROPOSITIONS INCLUDED IN THE QUESTIONNAIRE

1. Departures from the historical cost convention are disclosed.
2. Departures from the consistency concept are disclosed.
3. Departures from the accrual concept are disclosed.
4. An accounting principle or method chosen from two or more available to meet a given circumstance is disclosed.
5. When accounting principles and methods have not been applied on the same basis from period to period in the determination of results of operations or financial position, the effect of the change is disclosed.
6. Comparative figures for the previous period are shown in the financial statements.
7. The basis on which fixed assets are stated is disclosed.
8. Fixed assets are shown by major categories such as land and buildings, plant and equipment.

APPENDIX. (Continued)

9. Costs of construction of fixed assets consist of direct cost of labor and materials plus an appropriate portion of overhead.

10. Interest on money borrowed to finance the construction of fixed assets is included in their cost during the construction period.

11. Fixed assets are written down (other than by depreciation) if their value to the business is lower than their net book value.

12. The amount of firm contracts for future capital expenditure, not accrued at the date of the financial statements, is disclosed.

13. When fixed assets are stated, in historical cost statements, at an amount in excess of cost, the basis for revaluation is disclosed.

14. When fixed assets are stated, in historical cost statements, at an amount in excess of cost, the excess is credited to revaluation reserve.

15. When fixed assets are stated, in historical cost statements, at an amount in excess of cost, depreciation is based on the revaluation amount.

16. When fixed assets are stated, in historical cost statements, at an amount in excess of cost, depreciation based on the revaluation amount is charged to income.

17. Leases are accounted for by the lessee as an installment purchase when the substance of the arrangement transfers the usual risks and rewards of ownership from the lessor to the lessee.

18. The method of accounting for leases is disclosed.

19. Charges for depreciation are made on a systematic and rational basis.

20. Depreciation charges reflect the estimated salvage value at the end of estimated useful life.

21. Depreciation methods are disclosed.

22. Depreciation charges are disclosed.

23. The amount of accumulated depreciation is disclosed.

24. Depreciation is provided by the declining balance or other method having similar effect such as sum-of-the-years digits.

25. Depreciation methods and rates are governed by tax requirements.

26. The basis on which inventories are stated is disclosed.

27. A breakdown of the inventory by types, such as finished goods, work-in-progress and materials, is disclosed.

28. Inventories are stated at cost or market, which ever is lower.

29. Market value ("market") of inventories is interpreted to mean net realizable value defined as estimated selling price less reasonable predictable costs of completion and disposal.

30. Cost of inventories consists of direct labor and direct materials.

31. The method of determining the cost of inventories (LIFO, FIFO, average, etc.) is disclosed.

32. When the market value of quoted investments is different from their carrying amount, the market value is disclosed.

33. Investments in 50 percent owned companies are accounted for on the equity basis.

34. Investments in less than 50 percent owned companies, over which the investor can exercise significant influence, are accounted for on the equity basis.

APPENDIX. (Continued)

35. When an investment is accounted for on the equity basis, adjustments similar to those on consolidation, such as the elimination of intercompany profits, are made.

36. Receivables are reduced by provisions to cover possible collection costs and other losses on unspecified as well as specific accounts that, on the basis of past experience and general business knowledge, may be incurred.

37. Receivables from affiliated companies are disclosed.

38. Receivables from directors are disclosed.

39. Liabilities to affiliated companies are disclosed.

40. When a liability is securerd on the company's assets, this fact is disclosed.

41. Discount or premium on an issue of long-term debt is amortized over the term of the debt proportionately to the outstanding principal balance.

42. Rights and preferences to dividends and to principal are disclosed.

43. Details of stock options exercised and outstanding are disclosed.

44. Cumulative dividends in arrears are disclosed.

45. Restrictions on distribution of retained earnings, because of trust deeds, bank loan agreements or other legal restrictions, are disclosed.

46. Movements in reserves during the period are disclosed.

47. Profits on long-term construction contracts are recognized on the percentage of completion method.

48. The nature and extent of hypothecated or pledged assets are disclosed.

49. Events or transactions occurring between the date of the balance sheet and the date of the auditors' report that may have a material effect on the financial position or results of operations being reported upon are disclosed or reflected in those financial statements.

50. Contingent liabilities are disclosed.

51. Sales and other revenue are disclosed.

52. Cost of sales is disclosed.

53. Pension costs are accounted for when pensions are paid.

54. Past service pension costs not provided for are disclosed.

55. Liabilities existing at the balance sheet date for pension rights vested in employees are provided by periodic provisions charged to income.

56. Provision for income taxes on the current period's profits is shown separately before determining net income.

57. Accounting practices adhere strictly to tax requirements.

58. When accounting income differs from taxable income, except for permanent differences, deferred taxes are recorded (comprehensive tax allocation).

59. Unusual and extraordinary gains and losses are taken direct to shareholders' equity.

60. Basic (primary) earnings per share are disclosed.

61. A statement of changes in financial position is included in financial statements.

APPENDIX. (Continued)

62. Consolidated financial statements, together with the corporate financial statements of a parent company, are prepared for the shareholders.
63. Consolidated financial statements are prepared when an investor owns more than 50 percent of the voting share capital of an investee company.
64. Intercompany transactions, profits, and losses are eliminated in consolidated financial statements.
65. The identity of the ultimate parent company is disclosed in the statements of a subsidiary.
66. The excess of the cost of acquiring a company over the total of the book amounts of the net assets acquired is assigned on the basis of fair values at the date of acquisition, to the tangible and identifiable intangible assets and to liabilities, and any unassigned amount is recorded as goodwill.
67. Goodwill is amortized against income over the period estimated to be benefited.
68. When, in a business combination accounted for as a purchase, the consideration is an issue of shares, their fair value is determined by reference either to the value of the underlying net assets acquired or to the market value of the shares issued, whichever is more clearly evident.
69. The basis of translating foreign currencies is disclosed.
70. In translating foreign currency financial statements, the closing exchange rate is applied to all assets and liabilities.

A Survey of the Present and Desirable International Accounting Topics in Accounting Education

TAHIRIH FOROUGHI and BARBARA REED*

This paper discusses the results of a survey of accounting academicians and practitioners regarding their views of the content of international accounting education in colleges of business administration in the United States. A questionnaire was designed to determine from accounting academicians what international accounting topics are currently being taught and to ask practitioners what topics should be taught in both graduate and undergraduate accounting and nonaccounting business programs. Their answers were analyzed to determine whether a significant difference exists between what is currently being taught in business schools and what accounting teachers and prospective employees believe should be taught.

The survey results indicate a statistically significant difference between the topics taught and what executives indicated should be taught in approximately 32 percent of the topics surveyed. For both graduate accounting majors and graduate nonaccounting business majors, no statistically significant correlation exists between the international accounting topics that most business executives listed as important and the topics currently included in the curricula of business schools.

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BACKGROUND

Accounting is a field that uses a set of universally understood and generally accepted principles and practices. Despite many national and regional differences in the legal, institutional, and environmental conditions of accounting and even in some of its conceptual and procedural aspects, accounting in general is a useful universal technical language.

The double-entry system and its basic techniques of debits and credits; the nearly standardized principles of objectivity and accounting entity; the methods of cost computation of the basic financial statements, and the principles of accounting period, materiality, conservatism, consistency, going concern, and the matching of expenses and revenues are universally understood, generally accepted, and continuously used. Thus, despite some national and regional differences in the interpretation and application of some of the accounting concepts and methods (such as the concepts of full disclosure, historical cost measurement, and revenue recognition), accounting is one area of academic knowledge and of practice that has achieved a wide degree of international acceptance.

Differences exist, however, in the manner in which this universal language is applied to actual business situations. In part, these differences, as well as the need to recognize and understand them, have led to the internationalization of accounting curricula. As a result, most courses in international accounting involve the comparative study of accounting standards; problems associated with accurate national and regional performance evaluation, planning and controlling operations, regulations, and systems; and practices.

International accounting courses are also concerned with multinational trade and multicurrency transactions among uninational and/or multinational corporations located in different countries. Transactions with foreign and multinational entities involve sales, purchases, and lending and borrowing activities conducted in foreign currencies. International accounting considers the technique for accounting for foreign currency transactions and for reporting foreign operations in terms of one currency (translated and restated consolidated financial statements).

A variety of terms and definitions has been used for this relatively new and interesting area of accounting study and practice. Definitions of these terms, such as *world accounting, multinational accounting, international accounting, comparative accounting, transnational*

accounting, accounting for foreign subsidiaries, accounting for developing countries, and *global accounting,*[1] are beyond the scope of this article.

Recently, increased emphasis has been placed on the internationalization of business and accounting curricula for several reasons. The advent of multinational corporations; the increasing technical, industrial, and commercial interdependence and interaction among countries; and the growth of modern universal communication systems are some of the important factors that have contributed to the perception of the need for (and the expansion in existing programs of) international accounting as a necessary part of business and accounting education.

In 1967, Gerhard Mueller projected that by 1977 the international dimension of accounting would be present throughout the accounting curriculum.[2] In the early 1970s, a series of special activities and conferences gave new attention to the field of international education. These conferences resulted in the creation of a task force on business and international education. In 1977, this task force prepared and submitted a report published by the American Council on Education.[3] The report emphasized the following:

Several surveys have found, . . . that a very high percentage of individuals are still becoming presidents of multinational corporations without even having had an international work experience, and that many managers with international responsibilities had had no international studies while at the university, and no management development program with international contents, while employed to prepare them for such international responsibilities.[4]

The report further emphasized that "looking at the business schools, it was found that efforts must be made in many directions to internationalize the curriculum"[5] and that "solid training in any of the functional fields of study in the business schools should

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[1] Tahirih Kh. Foroughi, "An Analytical Review and Examination of Approaches Used in the Teaching of International Accounting," *International Journal of Management* (June 1986).

[2] Gerhard G. Mueller, "Curriculum Aspects of International Accounting Matters," Proceedings of the *Second International Conference of Accounting Education* (London, England, August 30-September 1, 1967), p. 41.

[3] Lee H. Radebaugh, "The Development of International Accounting Education" in *Multinational Accounting, A Research Framework for the Eighties,* ed. Frederick D. S. Choi (Ann Arbor, Mich.: University Microfilms, 1981), 74–75.

[4] Task Force on Business and International Education, *Business and International Education* (Washington, D.C.: American Council on Education, May 1977), 3–4.

[5] Ibid.

be understood to include the international dimensions of that field."[6]

The American Association of Collegiate Schools of Business (AACSB), in its meeting of 13 June 1980, voted unanimously to adopt the inclusion of international topics in the curricula of business schools as part of its accreditation requirements. For the accounting curriculum, numerous alternatives regarding inclusion of these topics were left open: (1) a separate course in accounting; (2) the international dimensions of accounting woven into the traditional financial, managerial, tax, and audit classes; or (3) a strong accounting component in a required international business course.[7]

The emergence, in recent decades, of the area of international accounting as an important area in accountancy practice and education has, on the one hand, contributed to the increased international cooperation among accounting educators and professionals with an expanded outlook toward the important function of training accountants. On the other hand, it has created a new awareness of the methodological, conceptual, institutional, legal, and environmental differences in the accounting world. Overall, the evolution of the field of international accounting has become a unifying force among accounting practitioners, scholars, students, and educators in support of harmonizing accounting standards and developing better and more suitable international accounting curricula. Because the internationalization of the accounting education is a relatively recent phenomenon, however, academicians are still searching for appropriate ways to include international accounting topics into the curricula.

Aware of these factors, the authors conducted a survey to identify information that would give academicians some guidance in developing international curricula.

Although the AACSB requires that international topics be included in the curricula of business schools, few guidelines indicate which international and accounting topics are necessary to prepare students adequately for their future careers. The authors' study sought to determine whether the international accounting topics that are currently included in the curricula of programs for undergraduate/graduate nonaccounting business majors, as well as those for undergraduate/graduate accounting majors, are the topics that most business professionals believe should be included.

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[6] Ibid.
[7] Radebaugh, "International Accounting Education," 77.

SURVEY

Two versions of the questionnaire were devised; the purpose of the one sent to academicians was to identify the international accounting topics included in the curricula of business schools; the one sent to business executives was to determine what they believe should be included in the curricula. The results were tabulated and analyzed using chi-square and Spearman's rho correlation coefficient to determine whether any statistically significant differences existed between the two groups.

The questions were based on a review of the presently available international accounting literature, which enabled the authors to conceptualize the scholars' and the practitioners' understanding and interpretation of international accounting and what is considered by both groups to be important in the education of business students.

The questions were partially derived from that study and from interpretation of Scott's 1980 study of international accounting problems.[8] The studies by Nair and Frank and by Greenlees and Foroughi, as well as an article by Agami, who identified the most frequently appearing topics from a survey of thirty-one U.S., Canadian, British, and New Zealand universities,[9] aided in the development of several questions. The most comprehensive attempt to identify international accounting problems was reported by Scott whose 1980 study identified 88 international accounting problems. Nair and Frank[10] identified 131 international accounting problems in their study. An analysis of the categories of these problems indicated that an overwhelming number of the problems are technical in nature. Analysis and categorization of the top 30 problems revealed, however, an equal number of technical and nontechnical problems. The numerous problems of international accounting identified by Scott and by Nair and Frank were classified into two major groups and into six subcategories in a subsequent study by Greenlees and Foroughi.[11]

A review and an examination of the international accounting course outlines and syllabi of thirty-six universities were used to

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[8] George M. Scott, *88 International Accounting Problems in Rank Order of Performance* (Sarasota: American Accounting Association, 1980).

[9] Abdel M. Agami, "The International Accounting Course State of the Art," *Journal of Accounting Education* (Fall 1983), 67–77.

[10] R. D. Nair and W. G. Frank, "The Harmonization of International Accounting Standards," *International Journal of Accounting* (Fall 1981), 61–77.

[11] Tahirih Kh. Foroughi and Malcolm E. Greenlees, *Moral and Spiritual Solutions to International Accounting Problems* (Canada: Association for Baha'i Studies, 1981).

devise a number of the questions in the questionnaire.[12] The review and examination revealed that international accounting is approached as an isolated subject and that the present approaches to it are generally technical, short term, problem oriented, present and past oriented, and emphasize the accounting differences among countries, nations, clusters, and regions.

In addition to this review of international accounting research, inclusion of items on the questionnaire was influenced by the authors' perception of the field of international accounting based on their professional, educational, research, and teaching experiences. Initially, sixty questions were considered; of these, eighteen were included in the questionnaire. The questionnaire was devised in a manner that enabled the respondents and the researchers to distinguish among the following categories of business education: (1) undergraduate accounting business major, (2) graduate accounting business major, (3) undergraduate nonaccounting business major, and (4) graduate nonaccounting business major.

The questionnaire was sent to academicians selected from the *Prentice-Hall Accounting Faculty Directory, 1986.* Selection was restricted to those academicians who were listed as having research or teaching interests in international accounting. Ninety questionnaires were sent; the response rate was 47 percent. Each academic respondent was requested to specify whether the topic included in each of the eighteen questions was currently included in the curriculum of his or her school.

Another version of the same questionnaire (with the same eighteen questions) was sent to a random sample of accounting practitioners and managers to determine their opinions regarding the international accounting contents of the four university programs. This sample was randomly selected from a list of business executives who normally recruit at colleges for companies that emphasize international business and from a list of professionals who are currently working in multinational corporations. Of the 110 questionnaires sent, 51 usable responses (46 percent) were received.

FINDINGS

Information regarding the responses of the executives surveyed are presented in Exhibit 1. According to a chi-square analysis, the responses of the two groups significantly differed on 32 percent of the items at various confidence levels. For example, 85 percent

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[12] Foroughi, "Teaching of International Accounting."

of the executive respondents believe that the topic U.S. taxation on international operations should be included in the curriculum of graduate accounting majors, whereas only 51 percent of the academicians indicate that it is currently included in the curriculum.

Another topic for which there is a statistically significant differ- ence between the responses of the two groups is the analysis of foreign financial statements. The percentage of business executives responding that foreign financial statement analysis should be included in the education of business students is significantly greater than the percentage of academicians whose schools include the topics in their program.

The results also indicated statistical differences in the responses related to the topics of harmonization of international accounting systems and of environmental influences on accounting. In this case, however, the percentage of business schools that include these topics is significantly greater than the percentage of business professionals who indicate that the topic should be included.

The results of the survey by topic for the four categories of students included in the study — graduate accounting majors, undergraduate accounting majors, graduate nonaccounting busi- ness majors, and undergraduate nonaccounting business majors — are listed in rank order in Exhibits 2, 3, 4, and 5. The response data of the two groups are ranked in descending order according to the number of executive respondents indicating that the topic should be included in the curricula and the number of accounting educators indicating that the topic is currently included in the curricula. The authors calculated the Spearman correlations that exist between the executives' preference for topics and the topics that are currently being taught. The correlation for graduate accounting majors and graduate nonaccounting business majors is relatively small (rho = .2038 and .2811) and statistically significant only at the .45 level and the .30 level, respectively. On the other hand, the correlation for undergraduate accounting majors and the undergraduate nonaccounting business majors is relatively high; rho = .4014 (p = .10) and .3313 (p = .20), respectively.

Based on these data, the international accounting topics covered in the undergraduate accounting curricula appear to correlate with the preferences of the business executives more than they do with the topics currently being taught to graduate accounting majors. This indicates that educators may have designed undergraduate curricula in recognition of the preferences of potential employees and may have tended to ignore these preferences for graduate students.

Exhibit 1. Survey Results
(In Percentages)

Topics	Accounting majors						Nonaccounting majors					
	Graduate			Undergraduate			Graduate			Undergraduate		
	Exec.	Topics	Signif.	Exec.	Topics	Signif.	Exec.	Topics	Signif.	Exec.	Topics	Signif.
1. Foreign currency transactions (import and export)	76	68	N/S	75	71	N/S	48	30	N/S	24	26	N/S
2. Accounting for forward exchange contracts	63	60	N/S	42	55	N/S	25	24	N/S	4	18	N/S
3. How foreign countries adjust financial statements for inflation	40	55	N/S	26	36	N/S	16	29	N/S	12	25	N/S
4. U.S. consolidation of foreign subsidiaries	78	62	N/S	70	69	N/S	29	27	N/S	14	16	N/S
5. Comparative financial accounting practices around the world	58	54	N/S	36	35	N/S	18	27	N/S	10	18	N/S
6. Comparative disclosure requirements around the world	38	49	N/S	22	29	N/S	12	27	10	10	18	N/S
7. Comparative auditing practices around the world	30	39	N/S	18	23	N/S	6	19	10	8	6	N/S
8. Comparative translation practices throughout the world	40	48	N/S	21	29	N/S	8	24	10	7	12	N/S
9. Analysis of foreign financial statements	70	40	1	44	23	5	43	12	.5	22	12	N/S
10. Issues in multinational transfer pricing	57	65	N/S	31	39	N/S	35	44	N/S	10	29	2.5

Exhibit 1. (Cont.)

	Accounting majors						Nonaccounting majors					
	Graduate			Undergraduate			Graduate			Undergraduate		
Topics	Exec.	Topics	Signif.	Exec.	Topics	Signif.	Exec.	Topics	Signif.	Exec.	Topics	Signif.
11. International standards and organizations	35	55	10	18	37	10	20	33	N/S	8	15	N/S
12. Problems of performance evaluation of foreign operations	50	58	N/S	17	32	N/S	39	39	N/S	17	21	N/S
13. Harmonization of international accounting systems	29	53	2.5	6	29	.5	2	35	.1	0	15	.5
14. U.S. taxation of international operations	85	51	.1	57	26	2.5	39	17	5	16	9	N/S
15. Unique management accounting issues for multinationals	64	49	N/S	31	25	N/S	27	30	N/S	10	18	N/S
16. Environmental influences on accounting	28	58	1	13	37	2.5	12	44	.5	6	33	2.5
17. International branch accounting	46	35	N/S	33	50	10	6	18	10	0	9	5
18. Accounting for property expropriation	44	11	N/S	13	10	N/S	6	3	N/S	2	0	N/S

Note: Exec. = Business executive; Topics = Topics in the curriculum; Signif. = Statistical significance

Exhibit 2. Curriculum Topics for Undergraduate Accounting Majors

Rank order listing of topics business executives believe should be included in curricula	Rank order listing of topics most frequently included currently in business curricula
1. Foreign currency transactions (import and export)	1. Foreign currency transactions (import and export)
2. U.S. consolidation of foreign subsidiaries	2. U.S. consolidation of foreign subsidiaries
3. U.S. taxation of international operations	3. Accounting for forward exchange contracts
4. Analysis of foreign financial statements	4. International branch accounting
5. Accounting for forward exchange contracts	5. Issues in multinational transfer pricing
6. Comparative financial accounting practices around the world	6. International standards and organizations
7. International branch accounting	7. Environmental influences on accounting
8. Unique management accounting issues for multinationals	8. How foreign countries adjust financial statements for inflation
9. Issues in multinational transfer pricing	9. Comparative financial accounting practices around the world
10. How foreign countries adjust financial statements for inflation	10. Problems of performance evaluation of foreign operations
11. Comparative disclosure requirements around the world	11. Comparative disclosure requirements around the world
12. Comparative translation practices throughout the world	12. Harmonization of international accounting systems
13. Comparative auditing practices around the world	13. Comparative translation practices around the world
14. International standards and organizations	14. U.S. taxation of international operations
15. Problems of performance evaluation of foreign operations	15. Unique management accounting issues for multinationals
16. Environmental influences on accounting	16. Analysis of foreign financial statements
17. Accounting for property expropriation	17. Comparative auditing practices around the world
18. Harmonization of international accounting	18. Accounting for property expropriation

Spearman's rank correlation coefficient = .4014 (p = .10)

Exhibit 3. Curriculum Topics for Graduate Accounting Majors

Rank order listing of topics business executives believe should be included in curricula	Rank order listing of topics most frequently included currently in business curricula
1. U.S. taxation of international operations	1. Foreign currency transactions (import and export)
2. U.S. consolidation of foreign subsidiaries	2. Issues in multinational transfer pricing
3. Foreign currency transactions (import and export)	3. U.S. consolidation of foreign subsidiaries
4. Analysis of foreign financial statements	4. Accounting for forward exchange contracts
5. Unique management accounting issues for multinationals	5. Environmental influences on accounting
6. Accounting for forward exchange contracts	6. Problems of performance evaluation of foreign operations
7. Comparative financial accounting practices around the world	7. How foreign countries adjust financial statements for inflation
8. Issues in multinational transfer pricing	8. International standards and organizations
9. Problems of performance evaluation of foreign operations	9. Comparative financial accounting practices around the world
10. International branch accounting	10. Harmonization of international accounting systems
11. Accounting for property expropriation	11. U.S. taxation of international operations
12. How foreign countries adjust financial statements for inflation	12. Comparative disclosure requirements around the world
13. Comparative translation practices throughout the world	13. Unique management accounting issues for multinationals
14. Comparative disclosure requirements around the world	14. Comparative translation practices throughout the world
15. International standards and organizations	15. Analysis of foreign financial statements
16. Comparative auditing practices around the world	16. Comparative auditing practices around the world
17. Harmonization of international accounting systems	17. International branch accounting
18. Environmental influences on accounting	18. Accounting for property expropriation

Spearman's rank correlation coefficient = .2038 (p = .45)

Exhibit 4. Curriculum Topics for Graduate Nonaccounting Business Majors

Rank order listing of topics business executives believe should be included in curricula	Rank order listing of topics most frequently included currently in business curricula
1. Foreign currency transactions (import and export)	1. Issues in multinational transfer pricing
2. Analysis of foreign financial statements	2. Environmental influences on accounting
3. Problems of performance evaluation of foreign operations	3. Problems of performance evaluation of foreign countries
4. U.S. taxation of international operations	4. Harmonization of international accounting systems
5. Issues in multinational transfer pricing	5. International standards and organizations
6. U.S. consolidation of foreign subsidiaries	6. Foreign currency transactions (import and export)
7. Unique management accounting issues for multinationals	7. Unique management accounting issues for multinationals
8. Accounting for forward exchange contracts	8. How foreign countries adjust financial statements for inflation
9. International standards and organizations	9. U.S. consolidation of foreign subsidiaries
10. Comparative financial accounting practices around the world	10. Comparative financial accounting practices throughout the world
11. How foreign countries adjust financial statements for inflation	11. Comparative disclosure requirements around the world
12. Comparative disclosure requirements around the world	12. Comparative translation practices throughout the world
13. Environmental influences on accounting	13. Accounting for forward exchange contracts
14. Comparative translation practices throughout the world	14. Comparative auditing practices throughout the world
15. Comparative auditing practices around the world	15. International branch accounting
16. International branch accounting	16. U.S. taxation of international operations
17. Accounting for property expropriation	17. Analysis of foreign financial statements
18. Harmonization of international accounting	18. Accounting for property expropriation

Spearman's correlation coefficient = .2811 (p = .30)

Exhibit 5. Curriculum Topics for Undergraduate Nonaccounting Business Majors

Rank order listing of topics business executives believe should be included in curricula	Rank order listing of topics most frequently included currently in business curricula
1. Foreign currency transactions (import and export)	1. Environmental influences on accounting
2. Analysis of foreign financial statements	2. Issues in multinational transfer pricing
3. Problems of performance evaluation of foreign operations	3. Foreign currency transactions (import and export)
4. U.S. taxation of international operations	4. How foreign countries adjust financial statements for inflation
5. U.S. consolidation of foreign subsidiaries	5. Problems of performance evaluation of foreign operations
6. How foreign countries adjust financial statements for inflation	6. Accounting for forward exchange contracts
7. Comparative financial accounting practices around the world	7. Comparative financial accounting practices around the world
8. Comparative disclosure requirements around the world	8. Comparative disclosure requirements around the world
9. Issues in multinational transfer pricing	9. Unique management accounting issues for multinationals
10. Unique management accounting issues for multinationals	10. U.S. consolidation of foreign subsidiaries
11. Comparative auditing practices around the world	11. International standards and organizations
12. International standards and organizations	12. Harmonization of international accounting systems
13. Comparative translation practices throughout the world	13. Comparative translation practices throughout the world
14. Environmental influences on accounting	14. Analysis of foreign financial statements
15. Accounting for forward exchange contracts	15. U.S. taxation of international operations
16. Accounting for property expropriation	16. International branch accounting
17. Harmonization of international accounting systems	17. Comparative auditing practices around the world
18. International branch accounting	18. Accounting for property expropriation

Spearman's rank correlation coefficient = .3313 (p = .20)

CONCLUSION

The increasing frequency and scope of international economic transactions provide an understandable urgency for educators to provide classroom instruction relative to the changing global environment. Accounting educators and accounting professionals must cooperate to establish an educational philosophy and educational procedures to serve as the basic infrastructure of international accounting education.

Most business schools are limited in the amount of time that can be devoted to the coverage of international accounting topics. It is important, therefore, that academicians include in the business curricula those topics that will be the most useful to the students in their future careers.

This study identifies the differences between the specific international accounting topics currently being taught in business schools and the preferences of business executives for topics to be covered in such schools. The findings of this survey may help to develop curricula that include relevant international accounting topics and increase the cooperation between accounting educators and accounting professionals.

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Deferred Income Tax Accounting: Opinions of Canadian Accountants

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Deferred income taxes are an accounting issue that has, since the 1940s, been the subject of heated debate to which no resolution appears likely. Although the various alternatives have been discussed vigorously, no substantive empirical work has attempted to measure the attitudes of the accounting profession to those alternatives. This paper reports the results of a survey of the accounting practitioners in Canada, where current deferred income tax practice is similar to that in the United States.

The Financial Accounting Standards Board (FASB) has issued statements[1] in an attempt to clarify the issues and to resolve the controversies regarding outstanding deferred income taxes. The Accounting Standards Committee of the Canadian Institute of Chartered Accountants (CICA) issued a background paper[2] in an attempt to stimulate debate and discussion on the topic. Not attempt was made in either country, however, to survey financial statement preparers or users as to their opinions on the subject. Rather, the problem was left for discussion with resolution to come from accounting academicians.

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[1] Financial Accounting Standards Board Discussion Memorandum, "An Analysis of Issues-Accounting for Income Taxes" (Stamford, Conn.: FASB, August 1983), and Financial Accounting Standards Board Research Report, "Accounting for Income Taxes: A Review of Alternatives" (Stamford: FASB, 1983).
[2] J. Milburn, "Accounting for Corporate Income Taxes" (Toronto: Canadian Institute of Chartered Accountants, January 1984).

The subject of *deferred income taxes* is basically an accounting term designed by the accounting profession; it refers to the estimation and disclosure of the potential tax liability to be paid at some future time. The generally accepted treatment assumes that taxes will ultimately be paid, a much debated point. Comprehensive tax allocation has been much discussed; empirical support has been gathered to indicate that certain timing differences do not appear to be reversed in the foreseeable future.[3] In response to this suggestion, Milburn argued that one must be careful not to be misled by misconceived arguments that comprehensive tax allocations per se are unsound.[4]

A research report by Ernst & Whinney[5] reviewed deferred income taxes in some detail. The lack of reference to the opinions of the broad group of preparers is, however, apparent. The present study attempts to provide information to critics of the theoretical issues relating to deferred income taxes. Numerous papers support a preference for one approach to deferred income tax accounting to another. One study indicated, however, that all the proposed methods were equally acceptable in terms of logic[6]; the study concluded with a call for empirical work to determine the particular preferences and needs of the various groups of interested parties.

SURVEY METHOD

Using the 1984 membership directory of the Canadian Institute of Chartered Accountants, the authors identified every chartered accountancy firm in Canada. Each firm was sent a questionnaire to be completed by the individual in charge of quality control. The objective of the survey was to learn the opinions of chartered accountant auditors of financial statements as to the topic of deferred income taxes.

Respondents were asked to express the level of their agreement with twenty-eight items regarding deferred income taxes. The survey included thirteen application-type (Category A) questions, four questions dealing with clarity, six questions dealing with

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[3] C. Drummond and S. Wigle, "Let's Stop Taking Comprehensive Tax Allocations for Granted," *CA Magazine* (October 1981), 56–61; and T. Beechy, "Accounting for Corporte Income Taxes: Conceptual Considerations and Empirical Analysis" (Toronto: CICA, 1983).

[4] J. Milburn, "Comprehensive Tax Allocation: Let's Stop Taking Some Misconceptions for Granted," *CA Magazine* (April 1982), 40–46.

[5] D. Beresford, L. Best, and J. Weber, "Accounting for Income Taxes: Change is Coming," *Journal of Accountancy* (January 1984), 72–78.

[6] N. Brouard and M. Legault, "Another Perspective on Deferred Income Taxes," *CA Magazine* (May 1984), 52–62.

usefulness, three attempting to measure emphasis (Category B), and two general statements as to the importance of deferred income taxes and whether they should be reflected in the accounts. A 5-point Likert-type scale was employed to measure the responses. A score of 1 indicated strong disagreement with the item; a score of 5 indicated strong agreement with it. Another item attempted to measure the perceived proficiency of the respondents in the area of deferred income taxes. A score of 1 indicated a very low level of proficiency; a score of 5 indicated a very high level of proficiency.

Of the 3,395 questionnaires, 463 were returned; this represents a response rate of 13.6 percent. To determine whether a nonresponse bias existed, the responses from the first twenty respondents were compared item by item to the responses from the last twenty respondents. Little nonresponse bias was found.

Partners of accounting firms constituted 87.3 percent of the respondents; 58.1 percent had been chartered accountants for more than ten years. Of the accounting offices surveyed, 67.5 percent had fewer than five partners.

SURVEY RESULTS

Most of the surveys included qualitative comments by the respondents. Few of these comments were positive. More than three hundred respondents, in referring to deferred income taxes, used such words or phrases as the following:

confusing	useless	meaningless
misleading	foolish	should be ignored
at best an estimate	irrelevant	inflexible
not beneficial	time consuming	inconsistent
misunderstood	not useful	not uniform
complicated	unclear	costly
arbitrary	unimportant	no utility

Some respondents added these comments:

- In practical accounting terms, this is almost a nonissue.
- Understood only by the sophisticated.
- Valuable only for its academic titilation.
- Most investors, bankers, and corporate managers neither understand nor take seriously the issue of deferred income taxes.
- Most bankers eliminate this item when calculating ratios.
- The preparation of financial statements on a theoretical basis

using deferred income tax theory serves only to give accountants practice in its complex calculation.

The opinions of the financial statement auditors on Category A questions are reported here (Exhibit 1). The thirteen questionnaire

Exhibit 1. Deferred Income Tax Opinions of Auditors of Financial Statements: Category A

Opinion no.	Opinion	Mean	Recommended practice
1	Deferred income taxes should be accounted for by the deferral method.	3.11(5)	X
2	Deferred income taxes should be accounted for by the accrual method.	2.68(8)	
3	Deferred income taxes should be included only in notes to the financial statements.	2.84(6)	
4	All timing differences should be considered in the calculations of deferred income taxes.	3.53(2)	X
5	The deferred income taxes account should be adjusted retroactively for changes in tax rates.	2.55(1)	
6	The deferred income taxes account should be adjusted prospectively for changes in tax rates	3.17(4)	
7	Deferred income taxes should be split into its long-term and short-term components.	3.57(1)	X
8	Short-term deferred income tax debits should be netted with short-term deferred income tax credits.	2.81(7)	
9	Long-term deferred income tax debits should be netted with long-term deferred income tax credits.	2.67(9)	
10	Deferred income tax debits should be netted with deferred income tax credits.	3.46(3)	X
11	Deferred income taxes should be adjusted to its present value through the financial statements.	2.23(12)	
12	Deferred income taxes should be adjusted to its present value in notes to the financial statements.	2.58(10)	
13	Deferred income taxes should not be adjusted to its present value.	3.53(2)	X

The opinions were measured on a 5-point Likert scale from strong disagreement (1) to strong agreement (5).
The opinions were ranked from (1) to (13).

items in the table are conveniently grouped into the six issues specifically referred to by both the FASB and the CICA.

For each issue on which more than one opinion was expressed, the Friedman two-way analysis of variance was calculated. All the chi-square results were found to be statistically significant at $p <$ .01. This indicated that the opinions regarding each issue differed significantly from one another. Furthermore, for each issue, the opinion that ranked the highest was found to coincide with recommended practice.

This seems to indicate that auditors agreed with current practice recommended by the regulatory bodies in the United States and Canada. Auditors preferred the deferral method to the accrual method. They wished tax allocations to remain comprehensive (rather than partial), thereby reflecting all timing differences. They also believed that there should be a division between short-term and long-term originated timing differences and an offset of deferred tax debits and credits. They also recommended against the use of present-value calculations.

The opinions of auditors of financial statements on Category B are reported in Exhibit 2. Items 14–17 deal with the clarity of the regulations in the CICA *Handbook*. Items 18–23 relate to the perceived usefulness of deferred taxes to different user groups. Items 24–26 summarize opinions on the current emphasis of deferred income tax.

Based on the authors' knowledge of the CICA *Handbook*, the order of items 14–17 was as expected. The terms *loss carrybacks* and *loss carryforwards* were considered to be much clearer to statement users than such terms as *virtual certainty* and *resonable assurance*, which were considered confusing and subject to conflicting interpretations. Despite this, the mean for each item is reasonably close to the others — between 3.47 and 3.84. Further, these means indicate that Canadian auditors find these CICA *Handbook* items (selected because they represent its more difficult issues) to be clear (certainly above average). These findings are somewhat inconsistent with the qualitative comments, although the comments are admittedly more general in nature.

The disclosure questions were intended to examine perceived attitudes of different groups of users: investors, creditors, and management. In addition, perceived differences between users of public and private companies were examined. According to those surveyed, auditors of financial statements believe that deferred income taxes were most important to investors and least important

Exhibit 2. Deferred Income Tax Opinions of Auditors of Financial Statements Category B

Opinion no.	Opinion	Mean
14	The CICA *Handbook* is clear on the treatment of loss carrybacks.	3.84*
15	The CICA *Handbook* is clear on the meaning of virtual certainty.	3.58
16	The CICA *Handbook* is clear on the meaning of reasonable assurance.	3.47
17	The CICA *Handbook* is clear on the treatment of loss carryforwards.	3.60
18	Disclosing deferred income taxes is useful to investors in public companies.	3.47*
19	Disclosing deferred income taxes is useful to investors in private companies.	3.25
20	Disclosing deferred income taxes is useful to creditors of public companies.	3.16
21	Disclosing deferred income taxes is useful to creditors of private companies.	2.92
22	Disclosing deferred income taxes is useful to management of public companies.	3.43
23	Disclosing deferred income taxes is useful to management of private companies.	3.09
24	Too much emphasis is given to deferred income taxes in university education.	3.13
25	Too much emphasis is given to deferred income taxes in Chartered Accountancy examinations.	3.21
26	Too much emphasis is given to deferred income taxes in general.	3.38*

The opinions were measured on a 5-point Likert scale from strong disagreement (1) to strong agreement (5).
* The highest ranked opinion within the particular grouping.

to creditors (Exhibit 2). The usefulness to management was somewhere in the middle. Finally, each group of users perceived deferred income taxes to be more useful for public companies than for private companies.

The issues concerning deferred income taxes related to how and where to account for them. The need or lack of need for any consideration (beyond a cursory comment in financial statement notes) has been vigorously debated by both accounting practitioners and academicians. Auditors appear to believe that the level of interest is average — higher in practice in general than in the classroom or in examinations (see Exhibit 2).

Using Spearman's Rank Correlation Coefficient, the authors investigated the relationships between the perceived usefulness of deferred income taxes to users, the clarity regarding their use, and the emphasis academicians and practitioners give the subject. The three concepts were correlated between .2296 to .6858 (in all cases, the significance level was <.001). Although opinions regarding clarity and perceived usefulness were positively related, they were negatively related to opinions concerning emphasis. In other words, as the perceived clarity of certain aspects relating to deferred income taxes in the CICA *Handbook* increased, the perceived usefulness of deferred income taxes to the various users also increased. However, as the perceived clarity and usefulness increased, the perceived emphasis given to deferred income taxes by both educators and practitioners decreased.

Deferred Income Taxes in the Accounts

Hypothesis 1 argues that the opinions of the respondents on deferred income taxes differ according to the extent to which the respondents believe that deferred income taxes should be reflected in accounts at all. This point was tested using the Mann-Whitney U Test at a significance level of $p < .05$. Responces were grouped in three categories (moderate disagreement, strong disagreement, and moderate and strong agreement, with the statement that the deferred income taxes should not be reflected in the account). Of the twenty-six Category A and Category B questions, the hypothesis was not rejected for only two opinions (Exhibit 3).

In general, the research indicates that for items 1–23, the moderate or strong disagreement that deferred income taxes should not be entered in the accounts had significantly high scores. For items regarding emphasis, however, moderate or strong agreement with the general statement had high scores. Despite the general criticism of deferred income taxes indicated by the comments, 55.9 percent of the respondents disagreed with the statement that deferred income taxes should not be in the accounts; only 16.2 percent agreed that deferred income taxes should not be reflected in the accounts.

Proficiency in the Use of the Deferred Income Tax

Hypothesis 2 argues that the opinions regarding deferred income tax differed according to the extent to which respondents perceived their own level of proficiency on the CICA *Handbook* section on deferred income tax. This hypothesis was tested using the Mann-Whitney U Test. Responses were placed into three categories: (1)

Exhibit 3. Financial Statement Auditors' Opinions: Testing Hypotheses 1-3

	n = 463 (100.0%) Deferred income taxes should not be accounted for at all				n = 460 (99.4%) Level of proficiency in CICA Handbook section on deferred income taxes				n = 463 (100.0%) Deferred income taxes is an important issue			
Opinion no.	Moderately & strongly disagree n = 259 (55.9%)	Neither agree nor disagree n = 129 (27.9%)	Moderately & strongly agree n = 75 (16.2%)	H1	Low & very low n = 36 (7.8%)	Neither high nor low n = 185 (40.2%)	High & very high n = 239 (52.0%)	H2	Moderately & strongly disagree n = 121 (26.1%)	Neither agree nor disagree n = 49 (10.6%)	Moderately & strongly agree n = 293 (63.3%)	H3
1	3.39*	3.16†	2.09	S	2.69	2.98†	3.29*	S	2.34	3.04†	3.45*	S
2	2.91*	2.75†	2.07	S	2.50†	2.78*	2.64†	NS	2.43†	2.77†	2.78*	NS
3	2.37	3.79*	2.87	S	3.11*	3.08†	2.61	S	3.42*	3.16†	2.55	S
4	3.84*	3.56†	2.40	S	2.97	3.31	3.78*	S	2.79	3.37†	3.86*	S
5	2.49†	2.83*	2.31	S	3.03*	2.69†	2.37	S	2.53†	2.39†	2.59*	NS
6	3.16†	3.44*	2.72	S	2.72	3.10†	3.30*	S	2.85	3.16†	3.30*	S
7	3.84	3.49†	2.77	S	2.81	3.22	3.96*	S	2.93	2.90	3.95*	S
8	2.80†	2.99*	2.52	S	2.67†	2.85*	2.80†	NS	2.88*	2.73†	2.79†	NS
9	2.60†	2.91*	2.49	S	2.58†	2.77*	2.60†	NS	2.74†	2.88*	2.61†	NS
10	3.44†	3.61*	3.27†	NS	3.64*	3.48†	3.41†	NS	3.28†	3.45†	3.54*	NS
11	2.05	2.62*	2.15	S	2.61*	2.43†	2.00	S	2.10†	2.24†	2.28*	NS
12	2.28	3.19*	2.59	S	3.08*	2.65†	2.45	S	2.88*	2.61†	2.46	S
13	3.37†	3.47*	4.19	S	2.81	3.41†	3.75*	S	3.70*	3.43†	3.48†	NS
14	3.97*	3.71	3.63	S	3.22	3.63	4.11*	S	3.45	3.63	4.04*	S
15	3.69*	3.52†	3.35	S	3.11	3.46	3.75*	S	3.31	3.41†	3.73*	S
16	3.55*	3.44†	3.25	S	3.03	3.35	3.63*	S	3.21	3.29†	3.61*	S
17	3.65*	3.56†	3.47†	NS	3.22	3.50†	3.73*	S	3.33	3.37†	3.74*	S

Exhibit 3. (Cont.)

Opinion no.	Deferred income taxes should not be accounted for at all — n = 463 (100.0%)			H1	Level of proficiency in CICA *Handbook* section on deferred income taxes — n = 460 (99.4%)			H2	Deferred income taxes is an important issue — n = 463 (100.0%)			H3
	Moderately & strongly disagree n = 259 (55.9%)	Neither agree nor disagree n = 129 (27.9%)	Moderately & strongly agree n = 75 (16.2%)		Low & very low n = 36 (7.8%)	Neither high nor low n = 185 (40.2%)	High & very high n = 239 (52.0%)		Moderately & strongly disagree n = 121 (26.1%)	Neither agree nor disagree n = 49 (10.6%)	Moderately & strongly agree n = 293 (63.3%)	
18	3.79*	3.49†	2.36	S	3.08	3.32†	3.64*	S	2.92	3.39†	3.72*	S
19	3.66*	3.19	1.95	S	3.22	3.02	3.43*	S	2.32	3.02	3.68*	S
20	3.47*	3.12	2.16	S	2.95	2.94	3.37*	S	2.62	3.12†	3.39*	S
21	3.27*	2.90	1.79	S	2.86	2.70	3.11*	S	2.18	2.78†	3.26*	S
22	3.75*	3.44	2.31	S	3.33	3.21	3.61*	S	2.76	3.45†	3.71*	S
23	3.52*	2.92	1.92	S	2.92	2.88	3.28*	S	2.16	3.10†	3.48*	S
24	2.93	3.17	3.73*	S	3.08	3.25*	3.03	S	3.49*	3.29†	2.95	S
25	3.02	3.22	3.84*	S	3.39*	3.34†	3.08	S	3.60*	3.10	3.07	S
26	3.09	3.48	4.23*	S	3.75*	3.53†	3.20	S	4.01*	3.59†	3.09	S

* The highest group mean for the particular opinion.
† This mean is not significantly different (at p ≤ .05) from the highest group mean for the particular opinion.
The opinions were measured on a 5-point Likert-type scale from strong disagreement (1) to strong agreement (5).

a low and very low level of perceived proficiency, (2) a high and very high level of perceived proficiency, and (3) no strong opinion on the CICA *Handbook* section on deferred income tax. The hypothesis is not rejected for only four questions.

According to the findings of the survey, opinions 1–23 for which high or very high perceived proficiency levels were indicated had significantly high scores. For the items concerning emphasis, on the other hand, low or very low perceived proficiency had high scores (except for opinion 24, for which the result is unclear). As to their perception of their proficiency with deferred income tax regulations, 52.0 percent of the respondents considered their proficiency to be high or very high; only 7.8 percent perceived their proficiency to be low or very low. Considering that the respondents were partners or employees of accounting offices, the authors found this response to be reasonable.

Importance of the Deferred Income Tax Issue

Hypothesis 3 argues that the extent to which the respondents believed deferred income tax to be an important issue differs. This hypothesis was tested using the Mann-Whitney U Test. Responses were grouped into three categories: (1) moderate and strong disagreement, (b) moderate and strong agreement, and (3) no strong opinion regarding the statement that deferred income taxes represent an important issue. Of the thirteen Category A items, the hypothesis was not rejected for seven statements. Accordingly, whether the hypothesis regarding Category A items is rejected on an overall basis is not clear. For the Category B items, however, the hypothesis was rejected.

For Category B items regarding clarity and usefulness, the responses that indicated moderate or strong agreement with the statement that deferred income taxes represented an important issue had significantly high scores. For emphasis items, on the other hand, moderate or strong disagreement with the general statement received high scores. As to the statement that deferred income taxes were important, 63.3 percent of respondents ageeed; 10.6 percent neither agreed nor disagreed, and 26.1 percent disagreed.

SUMMARY AND CONCLUSIONS

This study investigated empirically the opinions of chartered accountant financial statement auditors as to deferred income taxes. Much has been written of the theoretical arguments concerning this extremely controversial accounting practice, but little had been done empirically to learn the opinions of the quality control professionals in the chartered accounting offices prior to

this study. Although data in this study were obtained from Canadian firms, the conclusions seem likely to be applicable elsewhere.

The survey results indicated the following information:

1. Canadian auditors were in general agreement with the regulations suggested in the CICA *Handbook* section on deferred income taxes.

2. Auditors of financial statements explicitly stated that the issue of deferred income taxes was essentially an esoteric luxury for the sophisticated user; for most others, the topic was of no real value and was accordingly ignored. At the same time, quantitative analysis of the survey results indicated that deferred income taxes were considered useful to investors, to management to a limited extent, and to creditors to a lesser degree; users within public companies would find deferred income tax amounts more beneficial than would users of financial statements of private companies. This finding highlights an interesting inconsistency between the many written comments in response to two survey statements. The Likert-scaled rankings confirmed this inconsistency.

3. The specific rules relating to deferred income taxes in the CICA *Handbook* were for the most part considered to be clear.

4. Emphasis on deferred income taxes both in theory and in practice was considered to be more than adequate.

5. Auditors of financial statements who believed the deferred income taxes to be clearer and more useful to users are those who consider deferred income taxes to have been given too little emphasis.

6. Despite the strongly negative and critical qualitative comments made by those surveyed, a majority of respondents find that deferred income taxes are an important issue (63.3 percent) and that deferred income taxes should be included in the accounts (55.9 percent).

7. A majority of respondents (52.0 percent) rated their own proficiency in following the CICA *Handbook* section of deferred income taxes to be high.

8. Overall, respondents who considered deferred income taxes to be important also believed that they should be in the accounts.

9. These respondents perceived their proficiency in following the deferred income tax regulations of the CICA *Handbook* to be the highest.

The authors hope that the results of this study will help those who formulate new deferred income tax practices, as well as the users of financial statements.

Differences in the Characteristics of Certified Public Accountants and Chartered Accountants: An Obstacle to Harmonization

EDWARD SHOENTHAL*

Comparative studies of accounting systems are essential in determining the extent to which international harmonization exists. The works of Mueller, Seidler, Frank, and Nair are well-known attempts at comparison and classification of such systems.[1] More recent studies in this area have been made by Nobes, Belkaoui, AlNajjar, and Goodrich.[2] The variables and techniques used by these researchers are diverse; however, they have identified elements of accounting systems that unite the countries and others that separate them.

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[1] G. G. Mueller, "Accounting Principles Accepted in the United States Versus Those Generally Accepted Elsewhere," *International Journal of Accounting* (Spring 1968), 91–103; L. J. Seidler, "International Accounting: The Ultimate Theory Course," *Accounting Review* (October 1967), 775–81; W. G. Frank, "An Empirical Analysis of International Accounting Principles," *Journal of Accounting Research* (Autumn 1979), 593–605; R. D. Nair, "Empirical Guidelines for Comparing International Accounting Data," *Journal of International Business Studies* (Winter 1982), 85–98; R. D. Nair and W. G. Frank, "The Harmonization of International Accounting Standards, 1973–1979," *International Journal of Accounting* (Fall 1981), 61–77.

[2] C. W. Nobes, "A Judgemental International Classification of Financial Reporting Practices," *Journal of Business Finance & Accounting* (Spring 1983), 1–19; A. Belkaoui, "Economic, Political, and Civil Indicators and Reporting Disclosure Adequacy: Empirical Investigation," *Journal of Accounting and Public Policy* (Fall 1983), 207–19; F. AlNajjar, "Standardization in Accounting Practices: A Comparative International Study," *International Journal of Accounting* (Spring 1986), 161–76; and P. S. Goodrich, "Cross-National Financial Accounting Linkages: An Empirical Political Analysis," *British Accounting Review* (Autumn 1986), 42–60.

The accounting elements that distinguish national systems from one another have been attributed to cultural differences among the countries and their systems. McComb has stressed this concept particularly as it relates to harmonization efforts:

International harmonization of accounting will not come about as the result of the imposition of uniform accounting practices — even if any group or institution had the will, the authority, or the power to impose such uniformity. Rather, it will result from an awareness of the cultural and societal reasons for such differences as exist in the underlying philosophy of accounting and corporate financial reporting in each country.[3]

Evidence indicates that differences exist in the characteristics of accountants across accounting systems.[4] The differences in competencies may be linked to the type of accounting information needed by users and provided by accountants; however, an investigation of more fundamental differences may provide insights into the cultural differences separating accounting systems. Differences found in the characteristics and backgrounds of accountants, such as sex, age, length of training, and education, may pose an obstacle to communication among accountants and, therefore, identification of these differences may provide insights into the cultural differences reflected in the various accounting systems and in harmonization efforts. Although no means are available to determine how the differences in characteristics affect the harmonization process, it can be proposed that such differences pose an obstacle to open communication among accountants just as language and user-orientation differences have posed obstacles to their communication.

PURPOSE OF THE STUDY

The purpose of this study was to determine whether differences in the characteristics and backgrounds between accountants in two countries from different accounting systems exist. The study was limited to two countries considered to be part of different systems to identify any differences between the groups. The United States and Great Britain, considered parts of different systems, were used in this study, which was confined to newly licensed accountants

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[3] D. McComb, "International Harmonization of Accounting: A Cultural Dimension," *International Journal of Accounting* (Spring 1979), 14.
[4] E. Shoenthal, "Classification of Accounting Systems Using Competencies as a Discriminating Variable," *Journal of Business Finance and Accounting* (forthcoming); and "Differences in Competencies of Newly Licensed Accountants in the United States and Great Britain," *Journal of Accounting Education* (forthcoming).

employed by large international accounting firms. The limitation to newly licensed accountants provided data for the most recent generation of accountants. This limitation therefore indicates differences that will likely continue to exist for an extended period because the differences among professional accountants noted here will most likely exist for some time.

DATA COLLECTION

Accountants in the United States (U.S.) and Great Britain (G.B.) were selected for comparison. The selection of these two countries is based on existing literature that classifies the accounting systems of the United States and Great Britain as two distinct systems (see footnotes 1, 2, 5). Additionally, the degree of industrialization and maturity of the accounting systems in both countries was considered so that the data would not be confounded by the problems beset by less developed accounting systems.

The population identified for this study consisted of the newly licensed accountants employed by the following firms:

Binder Dijker Otte Et Co. (Seidman & Seidman, New York; Binder Hamlyn, London)
KPMG Peat Marwick (previously known as Main Hurdman, New York; Thomson McLintock & Co., London)
Ernst & Whinney (New York and London)
Arthur Young & Company (New York; Arthur Young McClelland Moores & Company, London).

Each participating firm supplied information on the personal characteristics of each individual in the population during the Spring/Summer 1984.

Newly licensed accountants in the United States were considered to be those who had passed all parts of the Uniform Certified Public Accountant (CPA) Examination in November 1983 and who had completed their required period of training experience by the Spring/Summer 1984. Newly licensed accountants in Great Britain were considered to be those who had passed all parts of the Professional Examination (CA) of the Institute of Chartered Accountants in England and Wales or the Institute of Chartered Accountants of Scotland in December 1983 and who had completed their required period of training by the Spring/Summer 1984. The population studied comprised sixty-six new CPAs and seventy-eight new CAs. Data collection procedures produced information

on fifty-seven CPAs (86 percent) and sixty-one CAs (78 percent). The response rate was deemed adequate to provide information on the characteristics of the population studied.

FINDINGS ON DIFFERENCES IN CHARACTERISTICS

The characteristics of accountants identified in this study were sex, age, length of training, relevancy of collegiate education to accounting, postbaccalaureate education, and area of assignment found to exist among newly licensed CPAs and CAs.

Sex

The distribution of male and female accountants included in the study is indicated in Exhibit 1. A chi-square statistic of 7.25 was derived for the distribution with one degree of freedom. This was significant at the .0071 level. This indicated that the sex of newly licensed accountants is related to country.

The chi-square statistic can be used to determine the degree of association between sex and country. The statistical significance of the relationship is indicated by the significance of the chi-square, which was .0071. In a 2 × 2 table the phi coefficient may take a value of zero to one; zero indicates a complete lack of association. In this case phi was .27. The contingency coefficient is another measure of association. Its value may range from zero to one but is limited to .71 in a 2 × 2 table. The contingency coefficient was .26.

The foregoing indicated that there is a statistically significant dependence between country and sex but that relationship is weak when measured by phi or the contingency coefficient. It can be stated, though, that the G.B. newly licensed accountant is more likely to be male than is the U.S. counterpart.

Age

The data relating to the age of newly licensed accountants are indicated in Exhibit 2. Age was determined according to the nearest birthday as of Spring 1984. The raw data indicate that the G.B. accountants in the sample are older than the accountants

Exhibit 1. Identification of Newly Licensed Accountants in the United States and Great Britain by Sex

	United States	Great Britain	Total
Male	34	51	85
Female	23	10	33
Total	57	61	118

Exhibit 2. Identification of Newly Licensed Accountants in the United States and Great Britain by Age

	United States	Great Britain	Total
23 years of age	4	0	4
24	16	7	23
25	17	12	29
26	5	23	28
27	7	10	17
28	2	6	8
29	1	2	3
30	4	0	4
31	1	1	2
Total	57	61	118

in the U.S. group. A chi-square test was determined for age. The data were regrouped according to those aged 24 years or younger, 25, 26, 27, and 28 or older. The chi-square statistic was 19.17, which was significant at the .0007 level with four degrees of freedom.

The significance of the relationship between the accountants' age and the country is indicated by Cramer's V, a statistic similar to phi, usable with rectangular tables. Cramer's V is based upon the chi-square statistic and was calculated to be .40.

The chi-square statistic and Cramer's V indicated a moderate degree of relationship, which is statistically significant, between age and country. It can be stated, therefore, that the G.B. newly licensed accountants are likely to be older than their U.S. counterparts.

Training

The length of training for CPAs is set by each state in the United States and for CAs by the G.B. Institutes. The training period in Great Britain is longer than that in the United States (see Exhibit 3). Because licensure in both countries cannot be obtained until the candidate has successfully completed the required examinations, the training period may continue beyond the minimum period until the candidate passes all examinations.

A chi-square was calculated after regrouping the data so that the statistic would be meaningful. They were regrouped according to training of less than three years, three but less than four years, and four years or more. The chi-square statistic was determined to be 36.42, which was significant at the .00001 level, with two degrees of freedom. Therefore, a relationship exists between country and length of training.

Exhibit 3. Identification of Newly Licensed Accountants in the United States and Great Britain by Years of Training

	United States	Great Britain	Total
1 year	1	0	1
1 < years < 2	9	0	9
2 ≤ years < 3	23	4	27
3 ≤ years < 4	16	42	58
4 ≤ years < 5	8	13	21
5 ≤ years < 6	0	2	2
Total	57	61	118

Prospective CPAs can prepare by taking additional required course work at a college or by completing a graduate degree program in accounting to satisfy the educational requirements of a particular state.

Cramer's V, used to determine the extent of this relationship, was calculated to be .56. This result is not unexpected considering the stated requirements for training in the United States and Great Britain. Accountants in Great Britain tend to spend more time in training prior to licensure than those in the United States. This relationship is moderate and significant.

Relevancy of Education

Educational preparation of accountants is dictated by each state in the United States and by the Institutes in Great Britain. Prospective CPAs can prepare by taking the additional required course work at a college or by completing a graduate degree program in accounting to satisfy the educational requirements of a particular state. In Great Britain the Consultative Committee for Accountancy Bodies determines whether a degree from a polytechnic, college, or university contains education relevant for entering the profession. Candidates with degrees that are considered relevant need not take additional formal education; however, other candidates must take (conversion) courses to study areas not previously undertaken. G.B. accountants not holding a degree can enroll in a foundation course of study at a college or polytechnic school to acquire the needed educational preparation (see Exhibit 4).

The data in Exhibit 4 indicate that newly licensed U.S. accountants were more likely to have earned degrees meeting the educational standards for entry into the profession prior to their employment, whereas the newly licensed G.B. accountants tended to have pursued degrees not directly related to the field of

Exhibit 4. Identification of Newly Licensed Accountants in the United States and Great Britain by Relevancy of Degree

	United States	Great Britain	Total
Relevant for licensure	52	21	73
Not relevant	5	40	45
Total	57	61	118

Exhibit 5. Identification of Newly Licensed Accountants in the United States and Great Britain with Postgraduate Degrees

	Holders of degrees earned after university, college, or polytecnic education		Total
	United States	Great Britain	
Holders	11	2	13
Nonholders	46	59	105
Total	57	61	118

accountancy. Any additional education was obtained before or during the required period of training leading to licensure.

A chi-square statistic of 37.93, at a significance level of .00001, with one degree of freedom, was calculated. This indicates a relationship between the country and the completion of a relevant degree in accounting. A phi of .58 and a contingency coefficient of .50 were determined from the chi-square statistic. This measure of association showed a moderate degree of relationship. According to these data, U.S. newly licensed accountants tend to have obtained an education in accounting, whereas the G.B. accountants tend to have completed a course of study other than accounting. These G.B. accountants took a conversion course to prepare for their job-related duties and the professional examinations.

CA firms are apparently more interested in students with liberal arts education, whereas the U.S. firms prefer students with degrees in accounting. Specific accounting training was deferred by G.B. accountants until after they had earned a bachelor's degree.

Post-graduate degrees. Data concerning newly licensed accountants who had earned a postgraduate degree (i.e., a master's or higher level degree) were collected (see Exhibit 5).

A chi-square of 6.17 with a significance level of .013, with one degree of freedom, was calculated. This indicated that there was a relationship between holding a postgraduate degree and country. A phi of .26 and a contingency coefficient of .25 were derived from the chi-square statistic. Although the relationship indicated

by the chi-square was weak, a statistically significant relationship between postgraduate study and country exists. U.S. newly licensed accountants are more likely to have earned a degree beyond the baccalaureate level than are the G.B. newly licensed accountants.

Assignment Area

Generally, newly licensed accountants experience a period of training prior to licensure. Both U.S. and G.B. firms attempt to provide new accountants with a basic, diversified training without specialization; however, U.S. accounting firms may transfer trainees to the tax area. This transfer may be based upon the firm's need or the request of the trainee. British firms provide more uniform exposure in all areas of accounting, including tax, during assignment to the auditing staff than do U.S. firms. British firms do not permit specialization during the training period leading to licensure. The data in Exhibit 6 indicate the areas of assignment for the sampled newly licensed accountants immediately prior to licensure.

A chi-square analysis is not appropriate for this variable due to the presence of an empty cell. A Mann-Whitney U Test indicates a statistically significant difference in the distributions of staff by area according to country. A mean ranking of 63.8 for the United States and 55.5 for Great Britain produced a U statistic of 1494.5, which was significant at the .0025 level (two-tailed). This was to be expected because the G.B. newly licensed accountant remains in the auditing area throughout the training process.

CONCLUSIONS AND SUMMARY

The findings presented here indicate the existence, for the two countries studied, of a relationship between certain characteristics and backgrounds of accountants according to country.

Specifically, newly licensed CAs in Great Britain are more likely to be male than are CPAs in the United States. In addition, accountants in Great Britain tend to be older, to spend more time in training prior to licensure, to be educated in nonrelevant

Exhibit 6. Identification of Newly Licensed Accountants in the United States and Great Britain by Assignment Area during Training Period

	United States	Great Britain	Total
Assigned to audit area	49	61	110
Assigned to tax area	8	0	8
Total	57	61	118

disciplines, to have a postgraduate degree, and to remain on the audit staff during training than their counterparts in the United States.

Differences in characteristics and backgrounds of accountants determined by country impact on the international harmonization process. Communications between accountants from different systems concerning accounting measurement, disclosure principles, auditing procedures, professional ethics, educational preparation, and training may be constrained by differences in the characteristics of the accountant involved. The different characteristics of the newly licensed accountants from the United States and Great Britain must result from cultural and societal differences between the two countries and the ways in which accountants are educated and trained. The differences in accountants by country presented here may affect international harmonization as do differences in language and financial information needs.

The development of the accounting profession in any country is the result of complex interactions of many variables including culture and education.[5] Recognition of this fact is essential to the understanding and appreciation of other accounting systems by accounting professionals from outside the system.

The discussion presented in this paper is not designed to provoke the abandonment of harmonization efforts but to highlight characteristic and background differences among accountants as a variable in the harmonization effort. The awareness of the existence of these differences and of any problems they create may enable the profession to seek solutions to the problems. Obstacles to harmonization exist, but the international accounting profession has been prepared to meet them.

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[5] R. Juchau, M. White, and R. Hopkins, "Tertiary Education Strategies for Accounting in Developing Societies," *International Journal of Accounting* (Spring 1986), 145–47.

The Income and Rate of Return of Farming Enterprises: A New Zealand Case Study

OWEN S. McCALL and BORIS POPOFF*

The measurement of farm income and the evaluation of farm enterprise performance in terms of rate of return on investment involves the general problems of income measurement and performance evaluation. Also included are the effects of general and specific price changes, as well as some additional problems that result from the special nature of farm operations. Government support for farming in the form of tax concessions, price support, and other subsidies and incentives may introduce further complications.

The performance of the farm industry in New Zealand has been an important economic, political, and social issue for many years. Farming is and will likely continue into the foreseeable future as the country's major export earner. During the year 1984–1985, the end of the period of this study, agricultural exports accounted for 58.1 percent of total N.Z. exports; meat and wool contributed 32.7 percent of total exports. In recognition of the need to expand export earnings, the interventionist government provided substantial support in the form of tax concessions and various subsidies. Further, high national inflation rates caused the government of the time to provide subsidies to exporters rather than to allow the controlled exchange rate to reflect costs within the country. With a change of government in 1984, the national economy was closely and critically reviewed. Discussions concerning the effective use of

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economic resources for the nation as a whole (in terms of generating and fairly distributing wealth) have questioned the effectiveness of farm contributions to the country's export earnings and the government's policy regarding farm subsidies. Among the first steps taken by the new Labor Government in 1984 was the removal of most of these subsidies and the devaluation (by 20 percent) of the N.Z. dollar, which was allowed to float.

OBJECTIVE OF THE STUDY

This study attempted to define a method to measure the income and rate of return for farm enterprises and to use this method to measure the income and to evaluate the performance of a typical N.Z. sheep farm during an eleven-year period (1974 to 1984). During this period, N.Z. farmers received substantial government support in the form of various tax concessions and subsidies. High levels of inflation, tax advantages, and subsidies, in addition to speculative investment, brought farm property values to such a level that the continuing viability of farming, especially for new entrants with long-term commitment, was questioned.

Recent changes in the N.Z. economic environment have largely resulted from the government's general economic policies and those related to farming in particular. Those policies have brought dramatic economic changes to the farming industry in New Zealand. This study examines the background of these developments in the context of the operations of one N.Z. sheep farm. The study of the operations of this farm may identify a wide range of common experiences in sheep farming in New Zealand during the period studied.

Income Measurement, Rate of Return, and Farm Operations

Income measurement presupposes the maintenance of capital. The measurement of farm income requires the selection of an appropriate concept of capital that will be maintained to provide the basis for the measurement of farm income and for the calculation and interpretation of rates of return on farming operations. The issue of accounting for changes in the value of assets during a period of specific price changes and for investment and income during an inflationary period is related to income measurement and capital maintenance.

Traditionally, N.Z. farmers have been more concerned with cash flows (i.e., the ability to pay debts, and their resulting cash positions than with income measurement, which, in addition to cash flows, involves the quantity of farm assets and changes in their value).

Subsidies and tax concessions have had a considerable impact on current and prospective cash flows and have been a major factor in investment decisions as to farm development and operations. To a large extent, farm income has been measured and reported in the context of prevailing tax regulations, a fact that has under-mined the credibility of this income among nonfarming sectors of the economy. An attempt to determine a realistic measure of farm income and the impact of government support on farm operations is important.

The joint nature of farm costs makes the traditional, historical cost accounting approach to asset valuation unsuitable for valuing some farm assets, such as livestock, stocks of wool, and produce. Such assets are usually valued according to some conservative fraction of market value. Of particular importance is the valuation of livestock because of its importance to the total assets of a farm enterprise. The normal basis of livestock valuation in New Zealand has been standard values, which have been assumed to represent conservative estimates of market prices. The application of the same standard value over a number of years, especially if the market value of livestock has significantly increased coupled with major fluctuations in livestock numbers, can, however, have a major distorting effect on reported income and rate of return.

The valuation of farm property is also difficult. Although a determination of the original cost of the farm property may have been possible, accounting for farm development expenditures, much of which may have been expensed to take advantage of tax laws, is problematic. Another difficult area is that of expenditures for maintaining the productivity of the land for items such as aerial top-dressing. These expenditures are likely to have varied from year to year. The extent and timing of such expenditures have been closely related to cash surpluses generated by operations and previously had been related to the level of government subsidies. One consequence of dealing in farm fortunes in New Zealand during the last few years has been the failure of many farmers (as a result of cash shortages) to maintain the productivity of farm land by applying fertilizer.

Other problems in measuring farm income and the rate of return relate to the separation of private and business assets and of the private and business expenses. Another problem concerns the valuation of the labor of the farmer and the farmer's family contributed in the farm operations. These latter values, especially for family-owned and operated farms (as most N.Z. farms are),

would be crucial in determining the income and rate of return from farming operations. The value of farm property includes the farmer's home and other assets such as motor vehicles used for both private and business purposes. Expenses associated with the ownership and use of such assets include interest expense on debt. Determination of the investment and associated operating expenses requires some arbitrary allocations between business and private assets and business and private expenses.

THE CASE STUDY

The farm chosen for this study is situated on the South Island of New Zealand in the southwest part of Otago province. Until 1972 the farm included 340 acres and approximately 1,100 sheep. In 1972 the operation was expanded by the purchase of a neighboring farm, which added 550 acres, 1,600 sheep, and 80 cattle for totals of approximately 900 acres and 2,700 sheep.

To make the land more productive, considerable development was completed during the years of this study. This involved clearing brush, applying lime, fertilizer, and grass, and completing fencing and drainage work.

Lambs and wool were the main source of farm revenue. The livestock on the farm (predominantly Romney sheep) increased from 2,700 to 4,500 during the period of the study. Breeding cows were phased out in the late 1970s and in 1982 goats were purchased to decrease the cost of controlling brush.

The following are the reasons this particular farm was chosen for the study.

1. It was reasonably well managed and was large enough to be a viable economic unit according to traditional N.Z. standards.
2. It was fairly typical of farms in the area and was assumed to reflect a reasonable range of common experience in sheep farming in New Zealand during the period of the study.
3. Relative to its size, extensive development work had been completed during the period necessitating sizable adjustments to be made to expense the development work for tax purposes.
4. Data of the operations of the farm, including cash records and supporting documents, were readily available.

Income Model and Measurement Methods Used in the Study

Income measurement models imply an underlying concept of capital maintenance. Controversy during the last twenty years regarding the nature and measurement of business income has

focused on two major concepts of capital maintenance: (1) monetary capital invested in business operations with an emphasis on the proprietary nature of business capital and income and (2) physical capital measured by the replacement cost of assets and reflecting an "entity" viewpoint of business capital and income (as distinct from a "proprietary" one) as advocated, for example, by Gynther.[1]

The concept adopted in this study is the maintenance of financial capital. Business operations are begun and maintained by investing money to earn a monetary return. In New Zealand, most farms are owned and operated by a sole farmer, family, or small partnership. In nearly all cases, the owner is involved in the farm management. Farming in New Zealand has strong proprietary orientation, and it is usually not possible to separate the economic welfare of the enterprise from the economic welfare of the farmer.

The case study was completed in two stages. In the first stage, the farm performance was evaluated primarily on the basis of historical investment amounts. In the second stage, the analysis covered the effects of specific price changes and general inflation.

The First Stage

In the initial stage of the study, the farm's performance was evaluated according to traditional accounting procedures. With the exception of livestock, which was valued at standard values, investment in the farm was measured on the basis of historical monetary outlays.

The major objectives of the first stage of the study were to determine the amount of investment in the farm in terms of historical monetary outlays adjusted for development expenditure, which had been expensed for tax purposes and to assess the effect of government subsidies and concessions on farm income. The year 1973 was the starting point. The farm had expanded in the previous year by the purchase of neighboring property. This purchase provided an objective basis to estimate the cash equivalent market value of the total property at the start of the period studied. This estimate was determined by adjusting the cash price of the property purchased in 1972 by applying an index of farm property values to a 1973 value, which was then compared with the 1973 government valuation of the same property. Because the difference between the estimated 1973 cash value and the government valuation in 1973 was less than 1 percent, the 1973 government

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[1] R. S. Gynther, "Accounting Concepts and Behavioral Hypotheses," *Accounting Review* (April 1967), 247–90.

valuation was accepted as an accurate measure of the market cash value of the total farm property at that time.

The farm was operated as a family trust. The trust owned the unit purchased in 1972; it leased the original portion of the property. The original owner, who purchased the property in 1972 and who created the family trust, held the official position of farm manager and was paid a salary. The farm business was considered a sole proprietorship to avoid any complications in the interpretation of the farm income. The transactions between the "owner" and the "enterprise" were eliminated by adding back to the farm income (as shown in the farm accounts) the salary of the owner/manager and the rent paid to the owner. Interest expense was also added back to reported profit because of the different financing arrangements that can be used in farm operatons. Further, it is difficult to separate objectively interest expense related to farm operations from the unrelated interest expense.

To avoid complications and distortions that may be introduced into the analysis of results by taxation, the profit amount used was the profit before tax. Taxation is complex in any business organization; farming is no exception. The farming context is problematic with large amounts of deferred taxation related to the use of standard values and the ability to write off development expenditure immediately. These problems often occur within the context of complex ownership arrangements, which may affect the distribution of farm income and the total tax.

The initial evaluation of the results did not allow for the value contributed by the farmer's own labor. Such allowance was made in the second stage of the study. No allowance was made for inflation, however, which was considerable during the period of the study. For example, from June 1973 to June 1984, consumer prices in New Zealand rose by 349 percent.

The following summarizes the adjustments made to the profit reported in the farm accounts:

> Historical cost profit as per accounts before tax
> + Interest expense
> + Salary of the owner/manager
> + Rent paid to owner
> + Development expenditure
> Adjusted historical cost profit

The adjustments to farm income shown in the farm accounts for the period of the study included rates of return on total assets,

owner's equity, and the impact of subsidies on income and rates of return (Exhibit 1); see Exhibit 2 for adjusted end-of-year balance sheets.

Government Subsidies

During the period of study, the government provided two types of subsidies: cost reduction and revenue expansion.

Cost reduction subsidies. These were of benefit only if the farmer purchased items or undertook activities related to subsidized farm operations. This category had two main classifications: subsidies related to the acquisition and application of fertilizer and subsidies for weed and pest contol. The fertilizer subsidies included (1) a subsidy to reduce the fertilizer cost; (2) a transportation subsidy related to the transportation cost of the fertilizer; for most of the period of the study, this subsidy covered total transportation costs; and (3) spreading bounties related to the cost to apply the fertilizer. The purpose of the weed and pest contol subsidy was to encourage the eradication of noxious weeds and pests not controlled in the normal course of business. The subsidy generally related to the cost of the chemicals used. These rates varied depending on the method of application (aerial or by ground contractor or the farmer).

Cost reduction subsidies included investment credits for qualifying plant and machinery and flood and drought relief.

Revenue expansion subsidies. These were based on the normal revenue sources for farmers. The main categories were supplementary minimum prices and livestock incentive plan. The supplementary minimum prices plan was introduced in 1978 as a guaranteed minimum average price for farm produce. If the set average price was not obtained, the government supported the price until the set average price was reached. The livestock incentive plan encouraged farmers to increase their number of stock. The farmer had a choice of receiving either $24 per extra stock unit above the number of the previous year's flock (which was taxable) or a $12 tax deduction per stock unit.

Impact of subsidies. Over the eleven-year period of the study, subsidies varied from 2.38 percent (1974) to 40.72 percent (1982) of the adjusted profit before interest and tax. Subsidies as a percentage of adjusted profit after interest varied from 2.97 percent (1974) to 47.46 percent (1983). The greatest contribution of subsidies, mainly from the revenue expansion type, was from 1982 to 1984. For example, in 1983 the total subsidies of $31,996 exceeded the reported profit figure of $26,954. Revenue expansion

Exhibit 1. Farm Income for Years Ended 30 June 1974–1984
(Totals Are Expressed in Dollars)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	TOTAL
Farm income before tax per accounts	13,721	10,894	12,116	32,391	16,318	31,645	38,189	26,298	44,463	26,954	36,039	289,028
Add back												
Interest paid	6,624	6,031	6,222	7,207	7,213	7,790	7,733	7,929	6,682	11,280	8,325	83,036
Development expenditure (adjusted to assets)	1,849	1,137	3,061	3,655	1,796	3,861	9,876	662	9,664	8,327	3,498	47,379
Farmer's wages and rentals	9,440	9,440	9,440	12,440	9,440	12,440	15,440	15,440	27,140	32,140	34,140	186,940
Adjusted historical cost profit including subsidies	31,634	27,495	30,839	55,693	34,767	55,736	71,238	50,329	87,949	78,701	82,002	606,383
Deduct government subsidies and support												
Fertilizer subsidy	743	853	2,385	6,143	11,565	9,660	5,645	5,011	2,727	3,489	4,910	53,131
Weed control	—	—	—	4,286	1,201	—	4,012	2,045	—	162	—	11,706
Water plan subsidy	—	—	—	—	—	—	—	—	6,744	—	—	6,744
Livestock and dollar-a-lamb incentive plans	—	1,831	—	—	—	2,484	2,052	—	—	—	—	6,367
Supplementary Minimum Prices	—	—	—	—	—	227	—	—	26,338	28,345	19,653	74,563
Total subsidies	743	2,684	2,385	10,429	12,766	12,371	11,709	7,056	35,809	31,996	24,563	152,511
Adjusted historical cost profit net of subsidies	30,891	24,811	28,454	45,264	22,001	43,365	59,529	43,273	52,140	46,705	57,439	453,874
Total adjusted assets*	182,664	173,280	183,233	212,499	206,013	228,206	258,838	257,349	275,797	313,976	328,458	
Owner's equity†	85,194	84,908	96,272	114,606	118,422	135,909	183,912	191,113	219,414	233,372	247,471	
(Totals Are Expressed in Percentages)												
Rate of return on total assets												
Adjusted profit including subsidies	17.31	15.87	16.83	26.21	16.88	24.43	27.52	19.56	31.89	25.06	24.97	
Adjusted profit net of subsidies	16.91	14.32	15.53	21.30	10.68	19.01	23.00	16.81	18.91	14.87	17.48	
Rate of return on owner's equity before tax, after interest												
Including subsidies	29.36	25.28	25.57	42.31	23.27	35.28	34.53	22.19	37.04	28.89	29.77	
Net of subsidies	28.48	22.12	23.09	33.21	12.49	26.18	28.16	18.49	20.72	15.18	19.83	
Subsidies as percentage of profit including subsidies												
Before tax and interest	2.35	9.76	7.73	18.73	36.72	22.20	16.44	14.02	40.72	40.66	29.99	
Before tax and after interest	2.97	12.50	9.69	21.51	46.33	25.80	18.44	16.64	44.06	47.46	33.38	

* See Exhibit 6
† See Exhibit 2

Exhibit 2. Adjusted Balance Sheets as at 30 June 1974–1984
(Totals Are Expressed in Dollars)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Owner's capital											
"Monetary Investment"											
Opening balance	79,037	85,194	84,908	96,272	114,606	118,422	135,909	183,912	191,113	219,414	233,372
Additions	6,157	(286)	11,364	18,334	3,816	17,487	48,003	7,201	28,301	13,958	14,099
Closing balance	85,194	84,908	96,272	114,606	118,422	135,909	183,912	191,113	219,414	233,372	247,471
Term Liabilities	87,780	86,938	86,047	88,749	79,111	77,914	66,635	55,266	43,789	68,466	62,799
Current Liabilities	9,690	1,434	914	9,144	8,480	14,383	8,291	10,970	12,549	12,138	18,188
Total	97,470	88,372	86,961	97,893	87,591	92,297	74,926	66,236	56,338	80,604	80,987
	182,664	173,280	183,233	212,499	206,013	228,206	258,838	257,349	275,752	313,976	328,458
Fixed assets											
Land	94,683	95,814	103,202	108,572	110,368	114,857	127,077	134,539	144,203	152,503	156,028
Buildings	32,305	33,039	32,320	31,601	33,000	32,247	31,494	30,738	29,983	50,252	49,384
Plant and vehicles	13,296	12,202	11,517	18,881	23,815	29,471	49,115	48,080	53,500	64,033	60,317
Total	140,284	141,055	147,039	159,054	167,183	176,575	207,686	213,357	227,686	266,788	265,729
Livestock at standard values											
Sheep	18,634	18,095	19,737	21,155	21,814	23,593	24,924	25,608	24,992	25,428	25,498
Cattle	5,040	5,490	5,580	4,500	3,090	2,880	2,190	1,710	1,860	1,530	1,080
Goats	—	—	—	—	—	—	—	—	1,510	2,040	2,500
Total	23,674	23,585	25,317	25,655	24,904	26,473	27,114	27,318	28,362	29,008	29,078
Investments	10,016	4,644	1,714	21,917	1,917	16,734	9,288	9,876	11,589	12,280	12,494
Current assets	8,690	3,996	9,163	5,873	12,009	8,424	14,750	6,798	8,115	5,900	21,157
	182,664	173,280	183,233	212,499	206,013	228,206	258,838	257,349	275,752	313,976	328,458

subsidies for the year amounted to $28,345. During the period of the study, the total subsidies received was $152,511, or 52.8 percent of the total reported profit of $289,028 and 25.2 percent of the adjusted historical cost profit of $606,383.

Rates of Return

For the period of the study, the rates of return on the farmer's monetary investment (before allowing for general inflation) varied considerably, both including and excluding subsidies. Including subsidies, the rate of return on total assets varied from 15.87 percent (1975) to 31.89 percent (1982) and on owner's equity from 42.31 percent (1977) to 22.19 percent (1981). Excluding subsidies, the rate of return on total assets varied from 10.68 percent (1978) to 23.00 percent (1980) and on owner's equity from 12.49 percent (1978) to 28.48 percent (1974).

The impact of subsidies on the rates of return was most evident in the last three years of the study (Exhibit 3). An interpretation of the income and rate of return generated by the farm as determined in the first stage of the study is difficult. These exclude an allowance for the value of the farmer's personal contribution to the operations of the farm as wages/salary. This allowance is necessary if a realistic rate of return is to be calculated on the investment in the farming enterprise. An allowance for the farmer's own labor was calculated in the second stage of the study. Generally, the adequacy of a rate of return depends on the expectation for a particular type of business, allowing for the perceived level of

Exhibit 3. Impact of Subsidies on Rates of Return (In Percentages)

Return on total assets	1982	1983	1984
Including subsidies	31.89	25.06	24.97
Net of subsidies	18.91	14.87	17.48
Difference	12.98	10.19	7.49
Increase in rate of return due to subsidies	68.6	68.5	42.8
Return on owner's equity			
Including subsidies	37.04	28.89	29.77
Net of subsidies	20.72	15.18	19.83
Difference	16.32	13.71	9.94
Increase in rate of return due to subsidies	78.8	90.3	50.1

risk associated with its operation. Further, interpretation of income and rate of return should include consideration of the accounting principles used to determine these rates. In this case, the amount of investment was determined primarily by using the traditional historical basis for the property and standard values for livestock. The valuation of livestock at standard values affects the assessed amounts of both investment and income, esspecially in view of the significant increase in livestock numbers. The period covered by the study was one of high inflation.

The Second Stage

The evaluation of the performance of the farm at a time of significant price changes and general inflation was the subject of the second stage of the study. That stage involved two steps. First, the nonmonetary assets of the farming enterprise were revalued to their current value to be described. An estimate was also made for the farmer's own labor in the operation of the farm. In determining the farm income applicable to investment, the esti- mated value of the farmer's labor was deducted as an estimated expense. Holding gains and losses resulting from the revaluation of assets were treated as a special item of income. Depreciation charged to revenue was based on the revalued amount of depre- ciable assets.

Assets were shown on the balance sheet at current value. No adjustments were made to liabilities because they were represented by monetary accounts, which were automatically expressed at current value. The owner's equity was shown at the historical amounts plus retained surplus. Retained surplus represented re- tained earnings and surplus from asset revaluations. No distinction was made in the equity section of the balance sheet between realized and unrealized gains. In fact, retained surplus was calcu- lated as a balancing item (i.e., as the difference between the historical investment of the owner and the net assets represented by the difference between assets and liabilities in the current value balance sheet).

In the next step, the historical investment in the farm operation was adjusted each year for changes in the general purchasing power of money to end-of-year dollars by the application of a consumer price index (Appendix 1). Historical investment at the beginning of the period was converted into end-of-period dollars. Changes in historical investment during the period were assumed to have occurred in average dollars and were accordingly converted to end-of-period dollars. The amounts of the annual adjustments

were deducted from retained surplus. The owner's equity and the assets and liabilities were then converted directly into 1984 dollars for comparative purposes.

Determining values. The current values used in the study were determined according to the current value of land, the current value of livestock, the valuation of buildings, and the valuation of plant and machinery.

The current value of land was estimated according to a combination of government valuation and indexes. The initial value of the farm property was computed by using the 1973 government valuation. Farm land was valued by the government in 1973, 1978, and 1982. To obtain an estimate of the current value of property between periods of government valuations, the University of Waikato price indices for current costs accounting were used; in this case, the index for rural land of the Otago region (Appendix 2) was used. To obtain the indexed current value for land, the opening value of the land was used, and the development expenditure, which had been expensed during the period, was added. The total amount was then indexed to determine the ending current value. Use of an index, which by nature is an averaging process, allows calculation of the difference between subsequent government valuation and the indexed value. In this study, differences between indexed valuation of land and a subsequent government valuation were retroactively prorated over the years after the previous government valuation in proportion to the rate of value changes shown by the index. The new government valuation was then carried forward as the new opening balance for current value of land.

The current value of livestock was determined by using the current value at or as near as possible to balance sheet date. From 1975 the valuations were obtained from the *New Zealand Farmer* (the journal did not publish livestock values prior to 1975, nor was any regular source of livestock valuation available for 1973 and 1974). To obtain estimates of the value of livestock for 1973 and 1974, the 1972 purchase prices on the expansion of the farm were used. The difference between the 1972 prices and the first available figures in 1975 was then prorated evenly over the three years. Although unlikely to be an accurate estimate of livestock values for the time, this was considered the best estimate available.

The valuation of goats created a problem because of the volatility of prices and differences in the quality of stock. The goats were valued first by reference to the most recent purchases and sales

made by the farmer and from national sales. The values were then confirmed with the farmer's stock agent.

The farm buildings were valued by using two University of Waikato indexes for determining the current value of buildings. Until November 1979, an index of average movement in building contractors' costs was used. After November 1979, this index series was dropped and costs were linked to several specific indexes that replaced it. The index used after 1979 was the farm buildings index. The publishers warned that for the correct use of the farm building index, a valuation of farm buildings after November 1979 was necessary. Because of the ex post nature of this study, a valuation was not possible.

University of Waikato indexes were used to value plant and machinery — first, the farm plant index until 1979, and then specific indexes for farm equipment such as tractors and farm motorcycles when these indexes became available in 1979.

The value of the farmer's labor. The calculation of a rate of return on farming operations required an estimate of the value of the farmer's labor to compute farm profit that could then be properly related to the amount invested in the farm; it was also necessary to separate the value of private assets from the value of business assets, in particular the value of the farmer's home on the farm property.

In this study, an alternative approach was used to value the home; its value was considered part of the total investment in farm operations, and its estimated rental value was included in the personal earnings of the farmer from his contribution to the operations on the farm — the value of his labor. The following were included in the estimate of the farmer's personal earnings: (1) the estimated wages of the farmer, (2) the livestock value used by the farmer, and (3) the rental value of the home supplied to the farmer.

The value of the wages assumed to be earned by the farmer should reflect the managerial skill of the farmer. Farmers, however, are considered self-employed; farm managers have no wages. The salary paid to the farmer under the family trust arrangement was not used on the grounds that it was not the result of an arm's-length agreement. Nor could actual wages paid to farm employees during the period be used because those wages were paid mainly to young people and farm trainees; their earnings could not be considered to represent the farmer's wages. An attempt was made to use the farm workers' wages as a starting point, but it was found

that they were not up to date. For example, the wages were expressed in pounds shillings and pence until 1978, although New Zealand changed to decimal currency in 1967.

Finally, the N.Z. average wage was used as an estimated value of the farmer's earnings. The figures used were government statistics published in the Official New Zealand Year Book and represented the total average weekly earnings of all persons in the country. This method had obvious shortcomings (the average wage did not even include farmers' earnings because farmers were considered self-employed). Further, during the period of the study, the monetary amounts of wages and salaries increased rapidly, which the average wage reflected. It was assumed that if the farmer had been paid wages, their monetary amount would have reflected a similar increase.

The value of the livestock used by the farmer was calculated on the basis that the farmer and his family consumed twenty-five sheep and one cow per year. Their value was calculated according to the current market prices for each class of livestock at year end.

The rental value of the home used by the family was calculated according to the rental market in nearby service towns. To incorporate the estimated value of the farmer's labor correctly in the adjusted accounts, two additional adjustments were made: (1) the value of produce used by the farmer was added to the gross profit from farming and was later deducted as part of the farmer's personal earnings, and (2) the rental value of the property was added to miscellaneous income and was later deducted as part of the personal earnings of the farmer.

COMMENTS CONCERNING THE RESULTS OF THE STUDY

The operating results of the farm, before tax and interest, adjusted for the farmer's own earnings and the effects of specific price changes, were calculated (see Exhibit 4). Three calculations of rate of return on total assets at current value were determined. The rate of return calculated on total income (Item 3, Exhibit 4) indicates, with the exception of depreciation based on current value, the way in which many N.Z. farmers would have perceived the results of their operations — largely in terms of cash flows augmented by increases in the value of the farm property. Over the eleven years, the rate of return was volatile, but until 1982 it was "high" and would have been somewhat higher if the depreciation charges calculated on the current value of assets had been

Exhibit 4. Summary of Operating Results Adjusted for the Effects of Specific Price Changes and Estimated Value of Farmer's Labor
(Totals Are Expressed in Dollars)

	1974	1975	1976	1977	1978	1079	1980	1981	1982	1983	1984
Gross profit	58,832	44,474	67,092	97,144	80,042	108,750	152,613	130,481	181,284	181,524	199,232
Other income	1,879	8,566	2,596	2,885	4,370	8,533	4,170	4,531	11,637	5,972	4,462
	60,711	53,040	69,688	100,029	84,412	117,283	156,783	135,012	192,921	187,496	203,694
Less cash expenses	−40,655	−37,964	−46,112	−56,822	−61,346	−70,544	−94,253	−98,713	−127,850	−145,307	−144,181
Depreciation	−3,755	−4,801	−5,217	−7,117	−7,038	−8,593	−12,855	−15,258	−20,874	−24,244	−22,266
	16,301	10,275	18,359	36,090	16,028	38,146	49,675	21,041	44,197	17,945	37,247
Add back interest expense, development expenditure, and farmer's "salary"	6,624	6,031	6,222	7,207	7,213	7,790	7,733	7,929	6,682	11,280	8,325
	11,349	10,637	12,561	16,155	11,296	16,361	25,376	16,162	37,240	40,923	37,794
	34,274	26,943	37,142	59,452	34,537	62,297	82,784	45,132	88,119	70,148	83,366
Less estimated value of farmer's labor	−5,790	−6,680	−7,560	−8,490	−9,295	−10,860	−12,260	−15,120	−17,240	−19,220	−20,590
Income before interest, tax but including subsidies	28,484	20,263	29,582	50,962	25,242	51,437	70,524	30,012	70,879	50,928	62,776
Less subsidies	−743	−2,684	−2,385	−10,429	−12,766	−12,371	−11,709	−7,056	−35,809	−31,996	−24,563
Income before interest and tax, and net of subsidies	27,741	17,579	27,197	40,533	12,476	39,066	58,815	22,956	35,070	18,932	38,213
Holding gains — Land	56,192	20,371	56,661	76,900	31,015	74,595	176,285	204,919	21,879	−105,702	−18,045
Livestock	1,744	−1,207	21,711	11,453	11,101	35,896	−12,525	22,668	5,492	17,279	32,521
Buildings and plant	9,776	12,455	17,082	9,813	10,771	11,316	16,007	27,249	35,702	12,386	9,036
Total holding gains	67,712	31,619	95,454	98,166	52,887	121,807	179,767	254,836	63,073	−76,037	23,512
Total income before interest and tax	95,453	49,198	122,651	138,699	65,363	160,873	238,582	277,792	98,143	−57,105	61,725
Total assets (Exhibit 5)	280,848	301,058	411,612	540,259	583,798	727,392	945,385	1,190,129	1,288,172	1,180,340	1,209,203
Return on total assets					(Totals Are Expressed in Percentages)						
(1) Income before interest and tax but including subsidies	10.14	6.73	7.19	9.43	4.32	7.07	7.46	2.52	5.50	4.31	5.19
(2) Income before interest and tax and net of subsidies	9.88	5.84	6.61	7.50	2.14	5.37	6.22	1.93	2.72	1.60	3.16
(3) Total income before interest and tax, net of subsidies and including holding gains	33.99	16.33	29.80	25.67	11.20	22.12	25.24	23.34	7.62	−4.84	5.10
Holding gains as percentage of total income	70.94	64.27	77.83	70.78	80.91	75.72	75.35	91.74	64.27	—	38.09

ignored. From 1974 to 1981, the rate of return was, overall, higher than the rate of inflation during the period.

The bulk of the total income came from holding gains — from increases in the value of assets, in particular the value of land. Special tax concessions applicable to investment in farm land during the period and, no doubt, inflationary pressures explain increases in the land values. Such increases were not justified, however, by returns from farm operations and could not be sustained in the long run.

Tax concessions applying to farmers and investment in farming during 1974–1981 included the following:

1. The ability to deduct for tax purposes development expenditure that would normally increase the capital value of land; such deductions reduced taxable income or resulted in "tax losses."
2. The ability to offset tax losses from farming against income from other sources.
3. The ability to consider total profit on sale as a nontaxable "capital gain" if land on which development expenditure had been claimed as a tax deduction were sold five years or later after acquisition.

Tax advantagaes and high inflation resulted in rapid increases in the value of farm land. Farmers acquired the land of other farmers, some of whom were prepared to sell at the new high prices to leave farming. The purchasers could borrow money at advanta- geous interest rates from the Rural Bank. Further increases in the value of land were expected. New entrants into farming had to pay high prices for land but could borrow money advantageously. There was an incentive to buy land before prices went even higher. Speculators with no long-term interest in farming began to invest in farm properties to avoid high marginal rates of personal taxation. Although marginal tax rates varied during the period of the study, they were for a time as high as 66 percent on taxable income over $40,000. Investing in farm properties held considerable advantages to professional and salaried people on high incomes: "tax losses" from farm operations, including development costs, could be offset against other income, resulting in substantial tax saving and, if the value of land continued to increase, in five years or so the property could be sold at a substantial, tax-free capital profit.

The rising value of farm properties also affected the spending patterns of some farmers. Many farmers saw the value of their properties reach and surpass $1 million. Although cash flows of

many farms may not have been high, loans against farm property were available with a high level of proprietary equity, retained in the farm. Borrowing could then be used, for example, to invest in urban property or property in some of the country's holiday resorts, both of which had shown propensity for continuing growth in value.

In the long term, however, the value of assets depends on their earning potential. The results of this study indicate that the values of farm properties reached by 1981 could not be sustained in the long run.

The rates of return on total assets at current value were calculated (see Exhibit 4). Using income before interest and tax but including subsidies and then using income before interest and tax and net of subsidies gives some indication of the return expected if the property had been purchased at the prices prevailing in each year of the study. For example, if the property had been purchased in 1980 or 1981, all other factors being equal, the rate of return, before interest and tax, would have been somewhere between 7.46 percent and 2.52 percent if subsidies in income were included, and between 6.22 percent and 1.93 percent if subsidies were excluded. The value of farm properties and the continuation of farm subsidies and tax concessions to farmers would undoubtedly have been important factors in the decision of people as to whether to purchase farm property at those prices. During the period to 1982, however, farm property values were not expected to continue to rise indefinitely. The effect of rising rural land values on the ability of people with genuine long-term interest in farming to enter the industry became a concern, as was the amount of subsidies paid to farmers. The latter concern would grow during this period until 1984 as the amount of subsidies paid to farmers increased even more.

In its 1982 budget, the government of New Zealand changed some farm policies. These changes, which sharply affected some farm property values, included extending from five to ten years the minimum period between acquisition and sale of farm prop-erties on which development expenditures had been claimed for tax purposes, without taxing the gains on the sale. The change also removed the right to offset new losses from farming against other income; such losses could be offset only against taxable income from farming operations. The result was a fall in the value of rural land. For example, rural land values in Otago, the location of the farm in this case study, were, on the average, 11.73 percent

lower at the end of June 1983 (the balance sheet date of the farm) and 26.9 percent lower at the end of December 1983 in comparison to the value twelve months earlier (Appendix 2).

The effects of inflation on the farm enterprise being studied must be considered. The impact of inflation is calculated on the monetary investment in the enterprise rather than on the annual results, although this could be done in an extension of the study.

The owner's cumulative monetary investment in the farm in *nominal* terms is $284,109; retained surplus (including holding gains on property) is $844,107 (see Exhibit 5). This is typical for farmers in similar circumstances during the period of the study. As stated earlier, however, inflation during the period was 349 percent. The owner's monetary investment amounted to $740,179, restated for general inflation, leaving retained surplus of $387,837 after the effects of inflation. The bulk of this surplus is represented by holding gains on assets, in particular farm property. The 1984 balance sheet shows the current value of the farm's fixed assets at $981,100. Despite the "adjustment" in farm property values in 1983/1984 (i.e., the fall in farm property values), farm property values could still be considered excessive, judging from the rates of return for 1983 and 1984 (Exhibit 4). In fact, the value of farm properties has fallen dramatically since 1984, particularly in 1987. The fall is due to the depressed state of farming caused by a combination of factors: the removal of farm subsidies, the continuing high levels of inflation, the high interest rates (at times in excess of 20 percent), and what is considered to be an "unrealistically high" exchange value of the New Zealand dollar caused by the high interest rates. In 1987 the value of rural land in Otago, the location of the farm studied, fell by 51 percent.

During the period of the study, the bulk of the farmer's "income" (the perceived growth of the farmer's wealth) clearly came from unsustainable increases in the value of the farm property. Although these increases in value may appear spectacular, especially in the later years of the study, they are much less impressive when inflation is considered. Subsequent events indicate strongly that for the period from 1974 to 1987, the farmer failed to maintain the general purchasing power of the monetary investment in the farm operation, or to make real gains in terms of operating returns and realistic increases in the value of farm property. During and after the period of the study, the farm operation did not show any perceptible sign of financial distress. This is largely due to the

Exhibit 5. Balance Sheets at Current Value as at 30 June 1974–1984
(Totals Are Expressed in Dollars)

	1974	1975	1976	1977	1978	1079	1980	1981	1982	1983	1984
Owner's equity											
"Monetary investment" (Exhibit 2)											
Opening balance	115,675*	121,832	121,546	132,910	151,244	155,060	172,547	220,550	227,751	256,052	270,010
Additions	6,157	(286)	11,364	18,334	3,816	17,487	48,003	7,201	28,301	13,958	14,099
Total "monetary investment" at end of year	121,832	121,546	132,910	151,244	155,060	172,547	220,550	227,751	256,052	270,010	284,109
Retained surplus	61,546	91,140	187,961	291,122	341,147	462,548	649,909	896,142	975,737	829,726	844,107
Total owner's equity	183,378	212,686	320,871	442,366	496,207	635,095	870,459	1,123,893	1,231,789	1,099,736	1,128,216
Term liabilities	87,780	86,938	89,827	88,749	79,111	77,914	66,635	55,266	43,789	68,466	62,799
Current liabilities	9,690	1,434	914	9,144	8,480	14,383	8,291	10,970	12,594	12,138	18,188
Total liabilities	97,470	88,372	90,741	97,893	87,591	92,297	74,926	66,236	56,383	80,604	80,987
	280,848	301,058	411,612	540,259	583,798	727,392	945,385	1,190,129	1,288,172	1,180,340	1,209,203
Fixed assets											
Land	159,955	181,457	245,506	327,866	361,115	440,199	628,704	841,330	864,869	767,750	753,203
Buildings	43,582	54,346	67,510	72,423	83,007	87,780	96,008	114,651	164,540	164,227	163,295
Plant and machinery	15,585	14,366	18,081	26,404	30,755	35,699	60,518	61,112	70,706	75,901	64,602
Total fixed assets	219,122	250,169	331,097	426,693	474,877	563,678	785,230	1,017,093	1,100,115	1,007,878	981,100
Livestock											
Sheep	30,124	32,369	57,318	74,666	86,000	120,496	120,922	143,582	149,608	133,412	164,382
Cattle	12,896	9,880	12,320	11,110	8,995	18,060	15,195	12,780	15,920	15,810	16,560
Goats	—	—	—	—	—	—	—	—	2,780	5,060	13,510
Total livestock	43,020	42,249	69,638	85,776	94,995	138,556	136,117	156,362	168,308	154,282	194,452
Other Assets	18,706	8,640	10,877	27,790	13,926	25,158	24,038	16,674	19,749	18,180	33,651
	280,848	301,058	411,612	540,259	583,798	727,392	945,385	1,190,129	1,288,172	1,180,340	1,209,203
Owner's equity as percentage of total assets	65.3	70.6	78.0	81.9	85.0	87.3	92.1	94.4	95.6	93.2	93.3

* The difference in the opening balance as shown in Exhibit 2 is due primarily to valuation of livestock, which in Exhibit 2 is shown at standard value and in this exhibit at current value.

Exhibit 6. Balance Sheet as at 30 June 1974–1984

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Owner's equity											
Monetary investment	470,319	469,396	501,174	545,480	553,630	586,857	665,687	675,903	710,405	725,678	740,179
Retained surplus	170,587	178,574	328,592	457,275	453,223	545,708	660,283	808,873	682,748	438,722	387,837
	640,906	647,970	829,766	1,002,755	1,006,853	1,132,565	1,325,970	1,484,776	1,393,153	1,164,400	1,128,016
Liabilities	340,657	269,234	234,711	221,904	177,731	164,593	114,135	87,504	63,769	85,344	80,987
	981,563	917,204	1,064,477	1,224,659	1,184,584	1,297,158	1,440,105	1,572,280	1,456,922	1,249,744	1,209,003
Fixed assets	765,831	762,165	865,217	967,228	963,573	1,005,207	1,196,141	1,343,682	1,244,230	1,067,141	981,100
Livestock	150,355	128,716	180,126	194,437	192,754	247,087	207,347	206,570	190,356	163,354	194,252
Other assets	65,377	26,323	28,134	62,994	28,257	44,864	36,617	22,028	22,336	19,249	33,651
	981,563	917,204	1,064,477	1,244,659	1,184,584	1,297,158	1,440,105	1,572,280	1,456,922	1,249,744	1,209,003

Note: The balance sheet is adjusted for specific and general price level changes expressed in dollars as at 30 June 1984.

absence of any major amount of debt. For example, at the end of 1984, the owner's equity in the farm was 93.3 percent.

Major (often critical) financial difficulties are faced by many N.Z. farmers who entered farming or expanded their farm holdings during the period of high farm property prices. Many farmers in this position have recently realized negative equity in their farms.

CONCLUSIONS

The results of this study indicate that in times of major price changes and high levels of inflation, the traditional methods of farm accounting are inadequate to present realistically the income results and asset status of farm enterprises. A realistic portrayal requires the recognition of the effects of both specific price changes and general inflation. The inclusion in income of holding gains arising from increases in the current value of assets is very risky unless the current value of the assets is sustainable by their productivity. The study, although relating to a specific sheep farm, is believed to reflect a wide range of common experience in sheep farming in New Zealand during the period and to have application in other farm enterprises. Also, the general principles applicable in this case to account for the effects of price changes and inflation in the interpretation of the results are considered to apply to other businesses.

APPENDIX 1. CONSUMER PRICE INDEX (AT MONTH END)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1949	88	88	88	88	88	89	90	90	90	90	90	91
1950	92	92	93	93	93	94	95	96	97	98	98	99
1951	100	101	102	103	104	105	106	106	107	107	107	108
1952	109	109	110	111	111	112	113	113	114	115	115	115
1953	115	115	116	117	117	118	118	118	119	119	119	120
1954	121	121	122	122	122	123	124	124	124	124	124	125
1955	125	125	126	126	126	127	127	127	128	128	128	129
1956	129	129	130	130	130	131	131	131	132	132	132	132
1957	132	132	132	132	132	133	134	134	135	135	135	136
1958	137	137	138	138	138	139	140	140	141	141	141	142
1959	143	143	144	144	144	145	145	145	145	145	145	145
1960	145	145	145	145	145	146	146	146	147	147	147	148
1961	148	148	148	148	148	149	149	149	150	150	150	151
1962	151	151	152	152	152	152	152	152	153	153	153	154
1963	154	154	155	155	155	156	156	156	157	158	158	158
1964	158	158	159	160	160	161	161	161	162	162	162	163
1965	164	164	165	165	165	166	166	166	167	168	168	169
1966	169	169	170	170	170	171	171	171	172	172	173	175
1967	176	178	180	181	182	183	183	183	183	183	183	184
1968	185	185	186	187	188	189	190	190	191	192	193	194

APPENDIX 1. (Continued)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1969	195	196	197	198	198	199	200	200	200	200	201	203
1970	204	206	207	208	209	210	211	213	216	219	221	223
1971	225	227	229	230	232	233	234	236	238	239	241	243
1972	244	245	246	247	248	249	250	251	252	253	255	257
1973	259	261	264	266	268	270	272	274	276	278	280	283
1974	285	287	290	293	296	299	302	306	309	312	316	319
1975	322	326	331	335	339	343	347	352	357	362	367	372
1976	377	383	389	394	399	404	408	412	416	419	423	427
1977	430	436	443	450	456	461	466	472	478	483	488	491
1978	494	497	502	506	510	515	519	523	528	533	537	541
1979	545	551	560	568	577	586	595	604	612	619	627	635
1980	643	652	661	670	678	686	694	702	711	720	728	735
1981	742	751	761	771	781	791	801	811	822	832	842	851
1982	860	871	886	900	913	924	935	944	953	961	966	969
1983	972	975	978	981	984	987	990	993	996	999	1001	1004
1984	1006	1011	1018	1025	1034	1045	1055	1066	1077	1088	1102	1118
1985	1134	1148	1160	1171	1183	1196	—	—	—	—	—	—

APPENDIX 2. RURAL LAND INDEX FOR OTAGO (AT MONTH END)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1974	338	345	353	360	367	374	377	379	382	385	387	390
1975	393	395	398	400	403	405	412	419	426	432	439	446
1976	453	460	467	473	480	487	496	505	514	523	532	541
1977	550	559	568	577	586	595	599	602	606	610	613	617
1978	621	624	628	631	635	638	646	654	663	671	679	687
1979	695	703	712	720	728	736	752	767	783	798	814	829
1980	851	873	895	917	939	961	968	974	981	987	994	1000
1981	1037	1073	1110	1146	1183	1219	1245	1271	1297	1322	1348	1374
1982	1351	1329	1306	1283	1261	1238	1254	1269	1285	1300	1316	1331
1983	1294	1257	1220	1182	1145	1108	1098	1088	1079	1069	1059	1049
1984	1055	1060	1066	1071	1077	1082	1086	1091	1095	1099	1104	1108
1985	1113	1117	1122	1126	1131	1135	—	—	—	—	—	—

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The Impact of Foreign Currency Translations on the New FASB Statement of Cash Flows

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When the Financial Accounting Standards Board (FASB) in late 1987 issued Statement No. 95, "The Statement of Cash Flows," business entities in the United States were required to replace the statement of changes in financial position with a new statement that focuses directly on cash flows. Those U.S. companies engaged in international activities were required to issue consolidated statements of cash flows that include the cash flows of their foreign operations.

Foreign subsidiaries of U.S. companies now must prepare cash flow statements in the functional currency, which in many cases is the local currency. The statement of cash flows in the local currency must then be translated into the reporting currency, normally the dollar; this statement is combined with domestic and other foreign operations to produce a consolidated statement of cash flows.

Previously, Opinion No. 19, *Reporting Changes in Financial Position*,[1] issued by the Accounting Principles Board (APB) permitted flexibility in defining funds and in adopting the presentation formats for the statement of changes in financial position. Further, Statement of Financial Accounting Standards (SFAS) No. 52, *Foreign Currency Translation*,[2] did not directly address the issue of translation adjustments in the statement of changes in financial position

[1] Accounting Principles Board, Opinion No. 19, *Reporting Changes in Financial Position* (New York: APB, March 1971), par. 9.
[2] Financial Accounting Standards Board, SFAS No. 52, *Foreign Currency Translation* (Stamford, Conn.: FASB, December 1981).

although the FASB noted that the requirement under APB Opinion No. 19 to disclose all important changes in financial position was continued.[3] Implicit in APB Opinion No. 19 is a requirement to disclose exchange rate effects for foreign currency translations in the statement of changes in financial position.

FASB Statement No. 95, "The Statement of Cash Flows,"[4] specifically addresses the issue of foreign currency translation. It proposes an implementation method to prepare consolidated cash flow statements of foreign operations; this method reduces the reporting flexibility previously permitted. Business enterprises that have not already adopted the new definition of cash and the presentation format should prepare for these changes.

The authors offer guidelines and a specific approach for the translation of a statement of cash flows from a local currency perspective to U.S. dollars before producing a consolidated statement of cash flows. The translation process generates an exchange rate effect (a balancing figure) that is reported as a separate item to reconcile the change that occurs when cash denominated in a local currency is converted into U.S. dollars. A comprehensive illustration and a mathematical proof are presented here to verify the exchange rate effect.

SFAS NO. 52 REVISITED

SFAS No. 52 adopted a functional currency approach that reflects the economic environment in which the foreign entity operates. The functional currency is normally the currency in which the foreign entity generates and expends cash.[5] In many situations, the local currency is the functional currency — francs for a French subsidiary, pounds for a British operation. In some cases, however, the U.S. dollar (or some other currency) may be identified as the functional currency.

The method adopted to convert foreign financial statements depends upon the functional currency. Two different methods may be adopted: (1) the translation approach (when the functional currency is the local currency) or (2) the remeasurement approach (when the functional currency is the U.S. dollar or some other currency). This paper focuses on the translation approach because in practice, the functional currency frequently is the local currency.

[3] Ibid., par. 100.
[4] Financial Accounting Standards Board, Statement No. 95, Exposure Draft, "The Statement of Cash Flows" (Stamford, Conn.: FASB, 1987), 100–5.
[5] SFAS No. 52, par. 5.

(The measurement approach presents different issues and problems and is not discussed here.)

The translation method retains the local currency perspective in which operations, transactions, and financial statements are denominated in the local currency. Therefore, current translation rates (or an appropriate weighted average rate) are used to convert transactions during a period.

Balance sheet items (except equity) are translated at current rates, income statement items at average rates, and equity items at historical rates. A translation adjustment to reconcile the cumulative effect of different rates is reported as a separate item in the stockholders' equity section of the balance sheet. The statement of cash flows is first prepared in the local currency and is then translated into U.S. dollars. The amount of the unadjusted net change in cash on the cash flow statement from the beginning to the end of the period will differ, however, from the amount of the change in the translated balance sheets from the beginning to the end of the period. An adjustment is required to reconcile this difference.

FASB STATEMENT NO. 95

FASB Statement No. 95, "The Statement of Cash Flows," specifically addresses the issue of exchange rate effects; it requires disclosure if the exchange rate effect is material.[6] The FASB's recommendations reduce the reporting flexibility permitted under APB Opinion No. 19 and SFAS No. 52.

The FASB considered two alternatives to report exchange rate effects. One alternative requires a company to report operating, investing, and financing activities at exchange rates in effect when the transaction occurred (or at a weighted average rate for transactions occurring throughout the year).

This alternative retains the statement's focus on cash flows while maintaining a local currency perspective. A disadvantage to it is that the change in cash on the cash flow statement does not reflect the difference in the translated cash balances on the comparative balance sheets because in some cases different rates are employed to translate cash transactions on the cash flow statement.

The other alternative reports changes in asset and liability amounts as the difference between the balances at the beginning and at the end of the period, effectively attributing the entire change in the balance to cash flow activities. The translation

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[6] FASB Statement No. 95, par. 100.

adjustment in the cash flow statement simply reflects the change in the cumulative translation adjustment reported in the balance sheet.[7] The changes in assets and liabilities include both exchange rate effects and increases (decreases) in actual account balances.

Unfortunately, this alternative does not report cash flows; it does produce changes in translated asset and liability amounts although no cash transaction occurred during a period. For example, if land were held throughout the year and no other sales or purchases occurred, the December 31 amount for land would differ from the January 1 amount by the amount of the change in exchange rates that occurred between those dates. The statement of cash flows reports a change in land although no cash inflows or outflows in the land balance occurred. Although the exchange rate effect for each item could be reported, this procedure produces a cluttered statement of cash flows[8] that is difficult to understand.

For a variety of reasons, the FASB selected the first alternative in which operating, investing, and financing activities are reported at exchange rates in effect when the transaction occurred (or at an appropriate weighted average rate). Note that on relevant balance sheets, January 1 cash is translated at the January 1 rate although December 31 cash is translated at the December 31 rate. Because the net change in cash on the cash flow statement must reflect the translated change in cash on the balance sheet, a balancing figure (the exchange rate effect) is required.

COMPREHENSIVE ILLUSTRATION — TRANSLATED FINANCIAL STATEMENTS

A translated income statement and a statement of retained earnings for 1987 appear in Exhibit 1; for comparison purposes, balance sheets at December 31, 1986, and December 31, 1987, are also included. The translated statements can be verified by applying the current rate method required by SFAS No. 52. The income statement is translated using a weighted average rate for 1987. Additional information on operating, investing, and financing activities is also presented for 1987 with appropriate exchange rates for the translation process.

The 1987 statement of cash flows is shown in Exhibit 2. The statement has been prepared in local currency units (LCUs) employing the guidelines of the new exposure draft. In this example, the direct method of reporting operating activities is used, with a reconciliation of net income to cash flow from operations shown

[7] Ibid., par. 104.
[8] Ibid.

in a separate schedule. The FASB now recommends the presentation of operating activities under both the direct and indirect methods.

The statement of cash flows in the functional currency (LCU) is next translated into the reporting currency (U.S. dollars). To maintain the local currency perspective, cash transactions are translated at the exchange rate in effect when the transaction occurred.

The illustration assumes that four investing activites occurred during the year:

1. Bonds were purchased as an investment on July 1 at 980 LCU (1,000 LCU par).
2. Land was sold on April 1 for 14,000 LCU, producing a 4,000 LCU gain.
3. Equipment was purchased on October 1 for 9,000 LCU.
4. Patents were sold on December 31 for 1,000 LCU, producing a loss of 200 LCU.

Assume further that four financing activities also occurred during 1987:

1. Bonds were issued on October 1 for 9,200 LCU (10,000 par).
2. Stock was issued on August 1 for 5,000 LCU.
3. Treasury stock was purchased on April 1 at a cost of 1,800 LCU.
4. Dividends of 1,500 LCU and 1,000 LCU were paid on January 30 and June 30, respectively.

In the operating activities section, cash receipts from customers and cash payments to suppliers and others are translated at the average rate because these transactions are assumed to occur uniformly throughout the year. Dividends received under the equity method are translated at the rate in effect when the cash was received. Amounts of interest received and paid are translated at the rate in effect on the specific cash transaction date.

Investing and financing items reported in the statement of cash flows have been translated using the exchange rate in effect on the specific transaction date. Note that any gains/losses are reported in the investing activities section and are translated at the rate in effect on the date the cash transaction took place.

A separate schedule to reconcile net income to cash flow from operations also is presented in Exhibit 2 in accordance with the requirements of the revised exposure draft issued in July 1987.

Exhibit 1.

Translated Financial Statements
Foreign Subsidiary, Inc.
Income Statement
For the Year Ended December 31, 1987

	LCU	Exchange rate	Translated
Sales	200,000	A	$115,000.0000
Cost of goods sold			
Beginning inventory	2,500	A	$ 1,437.50
Add: Purchases	140,000	A	80,500.00
Goods available for sale	142,500		$81,937.50
Less: Ending inventory	3,500	A	2,012.50
Cost of goods sold	139,000		79,925.0000
Gross profit	61,000		$35,075.0000
Depreciation expense	3,225	A	$ 1,854.375
Amortization expense	1,500	A	862.500
Other operating expenses	15,000	A	8,625.000
Operating income	41,275		$23,733.1250
Other revenues & expenses			
Investment income	2,000	A	$ 1,150.000
Gain — sale of land	4,000	A	2,300.000
Interest revenue	304	A	174.800
Loss — sale of patents	(200)	A	(115.000)
Interest expense	(1,620)	A	(931.500)
	4,484		2,578.3000
Pretax income	45,759		$26,311.4250
Income tax expense	(13,729)	A	(7,894.1750)
Net income	32,030		$18,417.2500

A = Average rate of exchange
P = Dollar balance, end of preceding period
D = Date of declaration
C = Current rate of exchange
H = Historical rate of exchange

Exhibit 1 (cont.)

Foreign Subsidiary, Inc.
Statement of Retained Earnings
For the Year Ended December 31, 1987

	LCU	Exchange rate	Translated
Retained earnings 1/1	42,150	P	$21,918,0000
Net income	32,030	A	18,417.2500
Dividends declared			
May 30	(1,000)	D	(570.0000)
November 30	(2,000)	D	(1,155.0000)
Retained earnings 12/31	71,180		$38,610.2500
Current assets			
Cash	1,000	C	$ 560.00
Accounts receivable	6,000	C	3,360.00
Interest receivable	150	C	84.00
Inventory	2,500	C	1,400.00
Prepaid insurance	3,000	C	1,680.00
Total current assets	12,650		$ 7,084.00
Property, plant, & equipment			
Equipment	10,000	C	$ 5,600.00
Less: Acc. depr.	(2,000)	C	(1,120.00)
	8,000		4,480.00
Buildings	50,000	C	$28,000.00
Less: Acc. depr.	(12,000)	C	(6,720.00)
	38,000		21,280.00
Land	40,000	C	22,400.00
Intangible assets			
Patents	12,000	C	6,720.00
Long-term investments			
Investment in A Co. stock	6,000	C	3,360.00
Investment in B Co. bonds	3,200	C	1,792.00
Total assets	119,850		$67,116.00

Exhibit 1 (cont.)

Foreign Subsidiary Inc.
Balance Sheet
December 31, 1987

	LCU	Exchange rate	Translated	
Current liabilities				
Accounts payable	1,200	C	$ 672.00	
Interest payable	800	C	448.00	
Dividends payable	1,500	C	840.00	
Income taxes payable	1,200	C	672.00	
Total current liabilities	4,700			$ 2,632.00
Long-term liabilities				
Due to parent	2,000	C		1,120.00
Bonds payable 8%	20,000	C	$11,200.00	
Premium bonds	1,000	C	560.00	11,760.00
Total liabilities	27,700			$15,512.00
Stockholders' equity				
Contributed capital				
Common stock, $10 par	30,000	H		15,300.00
Other contributed capital	20,000	H		10,200.00
Earned capital				
Retained earnings	42,150			21,918.00
Cumulative translation adjustment				4,186.00
Total liabilities & equity	119,850			$67,116.00
Current assets				
Cash	44,491	C	$25,804.78	
Accounts receivable	21,000	C	12,180.00	
Interest receivable	200	C	116.00	
Inventory	3,500	C	2,030.00	
Prepaid insurance	2,000	C	1,160.00	
Total current assets	71,191			$41,290.78

Exhibit 1 (cont.)

Foreign Subsidiary Inc.
Balance Sheet
December 31, 1987

	LCU	Exchange rate	Translated	
Property, plant, & equipment				
Equipment	19,000	C	$11,020.00	
Less: Acc. depr.	(3,225)	C	(1,870.50)	9,149.50
Buildings	50,000	C	$29,000.00	
Less: Acc. depr.	(14,000)	C	(8,120.00)	20,880.00
Land	30,000	C		$17,400.00
Intangible assets				
Patents	9,300	C		5,394.00
Long-term investments				
Investment in A Co. stock	72,00	C		4,176.00
Investment in B Co. bonds	3,150	C		1,827.00
Investment in C Co. bonds	984	C		570.72
Total assets	173,600			$100,688.00
Current liabilities				
Accounts payable	6,000	C	$ 3,480.00	
Interest payable	1,200	C	696.00	
Dividends payable	2,000	C	1,160.00	
Income taxes payable	6,000	C	3,480.00	
Total current liabilities	15,200			$ 8,816.00

Exhibit 1 (cont.)

Foreign Subsidiary Inc.
Balance Sheet
December 31, 1987

	LCU		Exchange rate	Translated	
Other liabilities					
Deferred income taxes		2,000	C		1,160.00
Long-term liabilities					
Due to parent		2,000	C		1,160.00
Bonds payable 8%	20,000		C	$11,600.00	
Premium bonds	800	20,800	C	464.00	12,064.00
Bonds payable 8%	10,000		C	$ 5,800.00	
Discount bonds	(780)	9,220	C	(452.40)	5,347.60
Total liabilities		49,220			$28,547.60
Stockholders' equity					
Contributed capital					
Common stock, $10 par		30,000	H		15,300.00
		1,000	H		573.00
Other contributed capital		20,000	H		10,200.00
		4,000	H		2,292.00
Earned capital					
Retained earnings		71,180	—		38,610.25
Less Treasury stock		(1,800)	H		(1,017.00)
Cumulative translation adjustment			—		6,182.15
Total liabilities & equity		173,600			$100,688.00

Exhibit 1 (cont.)

Foreign Subsidiary, Inc.
Additional Information, 1987

The foreign subsidiary was purchased on January 1, 1984.

January 1, 1987 account balances

The investment in stock account represents a 20 percent interest. The subsidiary uses the equity method to account for its investment and received dividends on August 1, 1987, in the amount of 800 LCU.

The investment in bonds represents a 3,000 LCU par value, 10 percent interest, 4 years remaining

Bonds payable, 8 percent, 5 years remaining

1987 items

Sales and purchases were earned and incurred uniformly.

Dividends declared: May 30 — 1,000 LCU; Nov. 30 — 2,000 LCU.

All interest is receivable (payable) semiannually on January 1 and July 1.

Relevant Exchange Rates

January 1, 1984	$.51
January 1, 1987	.56
January 30, 1987	.5625
February 1, 1987	.5625
April 1, 1987	.565
May 30, 1987	.57
June 30, 1987	.5725
July 1, 1987	.5725
August 1, 1987	.573
October 1, 1987	.5752
November 30, 1987	.5775
December 31, 1987	.58
Weighted average 1987	.575

Exhibit 2.

Foreign Subsidiary, Inc.		
Statement of Cash Flows		
For the Year Ended December 31, 1987		

	LCU	Exchange rate	Translated
Cash flow from operations			
Cash receipts from customers	185,000	.575	$106,375.00
Interest received 1/1	150	.56	84.00
7/1	150	.5725	85.875
Dividends received	800	.573	458.40
Cash payments to suppliers	(135,200)	.575	(77,740.00)
Cash payments for expenses	(14,000)	.575	(8,050.00)
Interest paid 1/1	(800)	.56	(448.00)
7/1	(800)	.5725	(458.00)
Accrued interest 10/1	200	.5752	115.04
Taxes paid	(6,929)	.575	(3984.175)
Cash flow from operations	28,571		$16,438.14
Investing activities			
Purchase of bonds	(980)	.5725	$ (561.05)
Sale of land	14,000	.565	7,910.00
Purchase of equipment	(9,000)	.5752	(5,176.80)
Sale of patents	1,000	.58	580.00
Total investing activities	5,020		$ 2,752.15
Financing activities			
Issuance of bonds	9,200	.5752	$ 5,291.84
Issuance of stock	5,000	.573	2,865.00
Treasury stock purchase	(1,800)	.565	(1,017.00)
Dividends paid 1/30	(1,500)	.5625	(843.75)
Dividends paid 6/30	(1,000)	.5725	(572.50)
Total financing activities	9,900		$ 5,723.59
Exchange rate effect			330.90
Increase in cash	43,491		$25,244.78

The FASB now requires that the direct method (reporting gross receipts and payments) be presented in the body of the statement and that the indirect method be shown in a separate schedule.

The effects of noncash items that occur uniformly throughout the year are adjusted to/from net income and translated at the average rate in the reconciliation schedule. These items include depreciation, amortization of intangibles, deferred income taxes, and investment income. Changes in working capital accounts (except interest payable) are translated at average rates because changes in these items are assumed to occur uniformly throughout the year. The reconciliation schedule also removes gains (losses)

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Exhibit 2 (cont.)

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Reconciliation of Net Income to Cash Flow from Operations

	LCU	Exchange rate	Translated
Net income	32,030	.575	$18,417.250
Depreciation expense	3,225	.575	1,854.375
Amortization of intangibles	1,500	.575	862.500
Loss on sale of patents	200	.575	115.000
Gain on sale of land	(4,000)	.575	(2,300.000)
Investment income	(2,000)	.575	(1,150.000)
Dividends received	800	.573	458.400
Increase in accounts receivable	(15,000)	.575	(8,625.000)
Increase in inventory	(1,000)	.575	(575.000)
Decrease in prepaid insurance	1,000	.575	575.000
Increase in accounts payable	4,800	.575	2,760.000
Increase in interest payable			
(issued between interest dates)	200	.5752	115.040
Increase in taxes payable	4,800	.575	2,760.000
Increase in deferred taxes	2,000	.575	1,150.000
Interest expense	1,620	.575	931.500
Interest paid			
January 1	(800)	.56	(448.000)
July 1	(800)	.5725	(458.000)
Interest revenue	(304)	.575	(174.800)
Interest received			
January 1	150	.56	84.000
July 1	150	.5725	85.875
Cash flow from operations	28,571		$16,438.140

from net income at the average rate since net income was translated at the average rate.

Interest revenue and expense (including premium and discount amortization) are translated at a weighted average rate on the income statement. To convert from accrual interest revenue and expense to cash received and paid, the amounts of interest revenue and expense are first removed from net income at the average rate. Then the amounts of interest *received* and *paid* are reported in the specific exchange rates in effect when the transactions took place. This adjustment is necessary because different rates have been used to translate interest revenue and expense (including amortization of premium or discount) and interest received and paid. Accrued interest received when bonds were issued between interest dates also is an adjustment to net income. It is translated at the transaction (issuance) date because changes in this particular account did not occur uniformly throughout the year.

On the translated statement of cash flows, subtotals for operating, investing, and financing activities are reported. The net change in cash is the difference between the translated cash balances on the January 1 and December 31 balance sheets as follows:

Cash, 12/31	44,491 × .58	$25,804.78
Cash, 1/1	1,000 × .56	560.00
Change in cash		$25,444.78

To obtain the dollar change that is the final figure on the cash flow statement, the exchange rate effect (a balancing amount) is reported as a separate line item in Exhibit 2. This element is needed to reconcile the cash change on the statement of cash flows to the change in cash reported on the comparative balance sheets.

The exchange rate effect occurs because translation rates used on the cash flow statement differ in some cases from those on the other financial statements. For example, an average rate is used to translate items on the income statement. However, the statement of cash flows translates income statement items at various rates, depending on the date of the transaction. Changes in working capital accounts are translated at end-of-year rates on the balance sheet but at average rates on the cash flow statement.

All investing and financing activities are translated at rates in effect when the transaction occurred. On the comparative balance sheets, assets and liabilities are translated at end-of-year rates. Dividends are translated at the declaration date on the retained earnings statement but at the payment date on the cash flow statement. Stockholders' equity items are translated at historical rates or at the rate on the transaction date, whichever occurred later.

Finally, balances that have not changed during the year are not reported on the statement of cash flows. As discussed earlier, however, dollar amounts for these items may change due to foreign currency fluctuations on the comparative balance sheets. To illustrate, two items — due to Parent Company (which would be eliminated in consolidation) and the cumulative translation adjustment — do not affect cash flows. Their translated amounts do reflect dollar changes on the comparative balance sheets, due to exchange rate fluctuations.

VERIFICATION OF THE EXCHANGE RATE EFFECT

The exchange rate effect for the illustration is verified in Exhibit 3. Subtotals in LCUs for operating, investing, and financing activities correspond to those in the cash flow statement prepared in

Exhibit 3. Verification of Exchange Rate Effect

Item	Amount (LCUs) ×	Change in rates	Trans- lated
Cash, January 1	1,000 ×	(.58 − .56)	$20.000
Operating activities			
Cash receipts	185,000 ×	(.58 − .575)	925.000
Interest received 1/1	150 ×	(.58 − .56)	3.000
7/1	150 ×	(.58 − .5725)	1.125
Dividends received	800 ×	(.58 − .573)	5.600
Cash payments	(135,200) ×	(.58 − .575)	(676.000)
	(14,000) ×	(.58 − .575)	(70.000)
Interest paid 1/1	(800) ×	(.58 − .56)	(16.000)
7/1	(800) ×	(.58 − .5725)	(6.000)
Interest accrued 10/1	200 ×	(.58 − .5752)	.960
Taxes paid	(6,929) ×	(.58 − .575)	(34.645)
Subtotal — operating	28,571		$133.040
Investing activities			
Land sale	14,000 ×	(.58 − .565)	$210.000
Patent sale	1,000 ×	(.58 − .58)	0.000
Bond purchase	(980) ×	(.58 − .5725)	(7.350)
Equipment purchase	(9,000) ×	(.58 − .5752)	(43.200)
Subtotal — investing	5,020		$159.450
Financing activities			
Bond issuance	9,200 ×	(.58 − .5752)	44.160
Stock issuance	5,000 ×	(.58 − .573)	35.000
Treasury stock	(1,800) ×	(.58 − .565)	(27.000)
Dividend payment, 1/30	(1,500) ×	(.58 − .5625)	(26.250)
Dividend payment, 6/30	(1,000) ×	(.58 − .5725)	(7.500)
Subtotal — financing	9,900		18.410
Exchange rate effect			$330.900

the functional currency. The exchange rate effect is computed by multiplying each cash flow item by the difference between end-of-year rates and rates at specific transaction dates. The total includes the exchange rate effect reported as a line item on the statement of cash flows.

CONCLUSION

FASB Statement No. 95, "The Statement of Cash Flows," requires foreign operations whose statements are denominated in a local currency to be translated at rates in effect on specific transaction dates (or at an appropriate weighted average rate). This translation approach maintains the statement's focus on cash flows (a major

objective of the exposure draft) while maintaining the local currency perspective required under SFAS No. 52.

The FASB's approach requires the inclusion of an exchange rate effect (a balancing figure) to reconcile the difference between the change in cash on the statement of cash flows and the change in cash derived from the comparative balance sheets. The exchange rate effect can be mathematically verified by multiplying the elements reported on the cash flow statement by the difference between the transaction date exchange rate on the cash flow statement and the year-end rate on the balance sheet.

This article has applied the FASB's new requirements for the statement of cash flows by translating a foreign operation's cash flow statement from the functional currency to the reporting currency (U.S. dollars). The discussion and comprehensive illustration should assist corporate accountants and accounting practitioners to implement the new statement of cash flows.

Accounting Education in Selected Middle Eastern Countries

ABDEL M. AGAMI and YASS A. ALKAFAJI*

An accounting educational system consists of students, faculty, curriculum, and resources (library, computers, facilities, financial resources, innovations, and technology) that are ideally combined harmoniously and efficiently to meet the educational needs of a given society. Further, the accounting educational system itself is an element of the larger educational system of the country it serves. The educational system is affected by and also affects the economy, as well as the national social and cultural environments. Consequently, an educational system should be designed to meet these overall needs. An effective educational system of one country might poorly serve the educational needs of another country if the two nations have drastically different economic systems or social and cultural settings.

The interdependence in the economic and social activities of nations is clearly greater now than a decade ago. Businesses and accounting firms cross national boundaries to search for business opportunities and qualified personnel. Understanding the differences among countries and attempting to harmonize these differences are becoming very important issues. They are issues that accounting education must address.

The purposes of this article are to survey the accounting educational systems in Egypt, Jordan, Saudi Arabia, Libya, Iraq, and Kuwait to identify similarities and differences between the systems of these countries and those of developed countries, to evaluate whether their systems serve their economic and social needs, and to recommend solutions for problems identified. The study is based

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on data collected from educational institutions, professional organizations, and available literature both in these nations, the United States, and in other countries. The purpose of this study is to contribute a better understanding of the educational systems of these countries and to contribute to a beneficial harmonization in accounting educational practices.

GUIDELINES FOR ACCOUNTING EDUCATION

Roy and MacNeill conducted pioneering studies regarding guidelines for accounting education; the purpose of their studies was to develop a common body of knowledge for the practicing certified public accountant (CPA). The results of their studies are presented in *Horizon for a Profession.*[1] Although the study was targeted for the educational needs for practicing CPAs in the United States, the findings of this early study have affected accounting education in the United States and other countries more than any other study, in the opinions of the present authors.

Roy and MacNeill recommended that the essential common body of knowledge should include courses in accounting, the humanities, economics, behavioral sciences, law, mathematics, statistics, probability, and the functional fields of business (Exhibit 1). As to accounting topics, the recommendations included coverage of the nature and functions of accounting, concepts of accounting (measurement and compilation, communication of accounting and reliability of accounting data), applications of concepts, and methods and techniques available to the CPA, including the computer. In

Exhibit 1. The Roy and MacNeill Report

Common Body of Knowledge
The Humanities
Economics
Behavioral Sciences
Law
Mathematics, Statistics, and Probability
The Functional Fields of Business
    Finance
    Production
    Marketing
    Personnel Relations
    Business Management
    Accounting

[1] Robert H. Roy and J. H. MacNeill, *Horizon for a Profession* (New York: American Institute of Certified Public Accountants, 1967).

the humanities, the authors carefully avoided specifying any rigid requirements; however, they recognized the need for accountants to understand basic concepts of logic, ethics, and communication, both oral and written. As to economics, the authors stated that the raw materials of accounting are economic events and that the product of accounting is information, which is used to make economic decisions. Consequently, accountants must have an extensive knowledge of economics, both micro and macro. As to behavioral sciences, the recommendation was that the beginning CPA be required to have a knowledge of the fundamentals of psychology and sociology. The report also recommended that the beginning CPA acquire a good knowledge of business law. The authors urged beginning CPAs to be trained to conceptualize in symbols; however, they did not require that beginning CPAs be mathematicians or statisticians. The report also recommended that the beginning accountant be exposed to the functional fields of business, such as finance, production, marketing, personnal relationships, and business management.

Although the report by Roy and MacNeill received positive acceptance from many accounting educators, some argued that it did not provide operational guidelines to assist in implementation. The report of the American Institute of Certified Public Accountants Committee on Education and Experience Requirements for CPAs (commonly referred to as the Beamer Report) developed an operational accounting educational program after considering the broad recommendations of the study by Roy and MacNeill.[2] The Beamer Report provided two alternative programs, one for five years and one for four years. Both programs included sixty semester hours of general education (Exhibit 2). The Beamer Report strongly recommended the five-year alternative.

The Beamer Report specified the courses and hours required in each area of general education, general business, and accounting. Although this report might be of significant relevance and importance in specifying the educational requirements of CPAs in the United States, its applicability to other countries is unclear. The report by Roy and MacNeill, however, provides general recommendations that are applicable to other countries and for career goals other than becoming a CPA in the United States.

In an effort to encourage effective harmonization of accounting education internationally, the International Federation of Account-

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[2] "Academic Preparation for Professional Accounting Careers," *Journal of Accountancy* (December 1968), 57–63.

Exhibit 2. The Beamer Report

The Model Accounting Program

General education	Semester hours
Communication	6–9
Behavioral Sciences	6
Economics	6
Elementary Accounting	3–6
Introduction to Computer	2–3
Mathematics	12
Other general education courses	25–18
	60

General business	Five-year program	Four-year program
Economics	6	6
The Social Environment of Business	6	3
Business Law	6	4
Production	3	2
Marketing	3	2
Finance	6	4
Organization	9	6
Quantitative Techniques	9	6
Written Communication	3	2
Business Policy	3	2
	54	38
Accounting		
Financial	9	6
Cost	6	3
Tax	3	3
Auditing	6	3
Systems	6	4
	30	19
Electives	6	3
TOTAL	150	120

ants (IFAC) began issuing International Education Guidelines (IEG) in February 1982. IEG No. 1 outlines a framework for the educational preparation of accountants,[3] which includes general education, professional studies, examinations, and practical experience (Exhibit 3). However, the guideline provides little guidance with respect to general education other than specifying that accounting education prepare students to pursue their professional studies successfully.

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[3] International Federation of Accountants, International Education Guideline No. 1, *Guideline on Prequalification Education and Training* (New York: IFAC, February 1982).

Exhibit 3. International Education Guideline No. 1
Guidelines on Prequalification Education and Training

General education

Professional studies
  Professional subjects
    Auditing
    Business Finance
    Electronic Data Processing
    Financial Accounting
    Managerial Accounting
    Taxation
  Supportive subjects
    Behavioral sciences
    Economics
    Law
    Mathematics and statistics
Professional examinations
Practical experience

International Education Guideline No. 1 states that purposes of the teaching of and the examinations in professional studies are to develop an understanding of the nature and role of accounting by including historical, ethical, and theoretical perspectives. Further, the educational program should prepare students to understand and apply the skills they have learned, to combine knowledge from different disciplines, to identify important issues, to exercise judgment, to formulate proposals, and to be able to communicate.

International Education Guideline No. 4 gives detailed information on the accounting curriculum for the common body of knowledge, professional subjects,[4] and the courses and topics to be included (Exhibit 4). IEG No. 6 identifies supportive subjects and topics to be included in each subject area[5] (Exhibit 5).

The similarities between the report by Roy and MacNeill and the International Education Guidelines are striking. Both recommend general subjects, such as behavioral sciences, economics, law, mathematics, statistics, finance, computer, and other business subjects in addition to accounting, auditing, and taxation. Neither specified the number of hours required in each subject or the number of years desirable to prepare accountants adequately.

[4] International Federation of Accountants, International Education Guideline No. 4, *Guideline on the Core of Knowledge — Professional Subjects* (New York: IFAC, 1984).
[5] International Federation of Accountants, International Education Guideline No. 6, *Guideline on the Core of Knowledge — Supportive Subjects* (New York: IFAC, September 1986).

Exhibit 4. International Education Guideline No. 4
The Core of Knowledge — Professional Subjects

Financial Accounting
    The scope of financial accounting
    Financial accounting principles
    Financial reporting
    Reporting under regulatory acts
    Data accumulation and analysis
Managerial Accounting
    Nature and objectives of managerial accounting
    Cost and revenue classification and analysis
    Accounting for costs
    Budgeting and standard costs
    Decision models
    Performance measurement
Information System (IS) and Electronic Data Processing (EDP)
    Objectives and scope of systems
    Basic elements and concepts of IS
    EDP systems
    Applications of EDP
Auditing
    Auditing objectives
    Auditing concepts
    Evidence
    Practices and procedures
    Rights, duties, and liabilities of audits
Taxation
    Objectives of taxation
    Types and nature of taxes
    The accountant's role in taxation
Business Finance
    Relationship of finance to accounting
    Financial environment
    Financial dimension of organizations
    Financial decisions
    Financial uses of accounting data

INFLUENCE OF ENVIRONMENT ON ACCOUNTING NEEDS OF DEVELOPING COUNTRIES

The countries included in this study can be classified as *developing countries.* Developing countries have unique economic, social, and cultural problems.[6] Economic problems include a relatively low per capita gross national product, low growth rates, a significant percentage of economical dependence on agriculture or natural

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[6] Roger Juchau, Mick White, and Roger Hopkins, "Tertiary Education Strategies for Accounting in Developing Societies — The Southwest Pacific as a Case Study," *International Journal of Accounting* (Spring 1986), 146–49.

Exhibit 5. International Education Guideline No. 6
The Core of Knowledge — Supportive Subjects

Economics
    Nature of economics
    Economic systems and markets
    National income and expenditure
    Monetary and fiscal policies
    International trade
    Demand and supply
    Price and output determination
    Economic models
    Forecasting
    Decision involving time and uncertainty
Law
    Laws of contracts and sale of goods
    Laws of associations including partnerships
    Law of companies
    Laws of insolvency
Mathematics and Statistics
    Mathematics
    Statistics
Behavioral Sciences
    Concepts of psychology and sociology
    Introduction to research methods
    Learning and performance
    Attitudes
    Motivation
    Stress
    Group and leadership
Management
    Planning
    Decision making
    Organizing
    Staffing
    Directing
    Controling
    Functional areas
    Organization and environment

resources, and an important role taken by the national government in the direction of economic development. Few of these countries have a stock market; the role played by those stock markets that exist is not significant in allocating resources among competing entities and goals.

The accounting informational needs in developing countries differ from those of developed countries. Instead of the heavy emphasis on financial accounting and auditing to provide infor-

mation to investors and creditors as to a given entity's profitability as in the case of developed countries, the emphasis in developing countries is on information needed for economic planning at the macro level, which causes national accounting — a subject rarely emphasized in developed countries — to be an indispensable part of the accounting curriculum. Managerial accounting is a very important subject in developing countries because it can provide useful information for evaluating economic activities, projects, and managers. Another difference between accounting in developed and developing countries is in the area of measurement. In developed countries, where most business entities are privately owned, income determination becomes the focus of measurement in accounting. On the other hand, in developing countries, where government ownership of at least a portion of economic activities is common, income measurement is quite often deemphasized, and efficiency measures and input/output relationships assume important roles.

Politics has played a vital role in shaping and forming accounting education in the countries studied. One important political element is the transfer of accounting education from one country to another, which occurs when one country has strong political ties with another. These ties have taken different forms, including colonization.[7] Countries such as Britain and France transferred many elements of their educational system to their colonies. Direct colonization does not exist now on a widescale basis, but political relationships between nations are influenced heavily by economic interests and international trade. For example, many of the major economic and political allies of the United States have adopted accounting educational systems similar to those it uses.

Despite the differences between developed and developing countries, many developing countries have taken the easy way to create their accounting educational systems by copying systems of developed countries. The developing countries do not adapt these systems to their specific economic, social, and cultural environments. Naturally, the imported educational systems have often failed to provide graduates who can meet the challenges of their societies.

[7] M. R. Hove, "Accounting Practices in Developing Countries: Colonialism's Legacy of Inappropriate Technologies," *International Journal of Accounting* (Fall 1986), 82.

ACCOUNTING EDUCATION IN SELECTED ARAB COUNTRIES

A survey of the accounting curriculum of one university of each of six Arab countries, Egypt, Saudi Arabia, Jordan, Libya, Iraq, and Kuwait, is presented.

Egypt

Egypt is the largest Arab country in many respects, including the size of its business and accounting education systems. Egypt provides a large percentage of the practicing accountants in the Arab world and an even higher percentage of the accounting faculties in this area.

The analysis of the educational system in Egypt is based on the accounting programs of Cairo University. Its College of Commerce was established in 1911 as an independent Higher Institute of Commerce and later became part of Cairo University. The study program consisted of two years of general commercial studies followed by specializations in accounting, business administration, economics, or political sciences during the last two years. In 1959, the Department of Economics and the Department of Political Sciences formed a separate college; in 1964, the area of insurance was added to the new college. Currently, the college consists of three departments: Accounting, Business Administration, and Insurance and Actuarial Sciences. The requirements for the first three years of undergraduate study are the same for the three departments; specialization occurs during the fourth year.[8]

The courses required for the first three years and the accounting specialization of the fourth year are listed in Appendix 1. All courses are required; there are no electives. The duration of the instructional year is thirty-two weeks with a midyear vacation period. Each course is taught three hours a week for an entire academic year. Although listed in Appendix 1 as three-hour courses, they are in fact equivalent to six semester hours in the U.S. system.[9]

Jordan

Jordan is playing an increasingly important role in the Arab world. It has taken the lead in higher education from Lebanon as a result of the prolonged Lebanese civil war. Jordan has two major universities, Jordan University and Yarmouk University; both offer

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[8] Cairo University, *Faculty of Commerce Course Contents* (Cairo: Cairo University Press, 1986).

[9] Metwali Amer and M. M. Khairy, "Accounting Education in Egypt," in *Accounting Education in Economic Development Management*, ed. Adolf J. H. Enthoven (Amsterdam: North Holland, 1981).

degrees in accounting. In addition, many two-year colleges offer associate degrees in accounting.

The Faculty of Economics and Administrative Sciences at Yarmouk University was established as an independent faculty in 1981; before that it was part of the Faculty of Science and Arts. The faculty now includes the following departments: Economics, Business Administration, Accounting, Public Administration, and Banking & Finance. Accounting was part of the Administrative Sciences Department from 1977 until Academic Year 1983/84, when the Department of Accounting was established. The University is on the semester system; students must complete a minimum of 123 hours to graduate (see the list of the requirements for the bachelor's degree in Appendix 2[10]).

Saudi Arabia

The analysis of the requirements for the bachelor's degree in accounting in Saudi Arabia is based on the accounting program of King Abdul-Aziz University. Its College of Economics and Administration began in 1967/68 and was the first college established within the University. Currently, the College has departments of Accounting, Management, Economics, Public Administration, and Political Sciences.[11] The requirements for the bachelor's degree in accounting of the College of Economics and Administration of King Abdul-Aziz University are listed in Appendix 3.

Libya

The analysis of the requirements for the bachelor's degree in accounting in Libya is based on the accounting program at Libyan University. The College of Economics and Commerce of Libyan University was established in 1957 and currently consists of four departments: Economics, Business Administration, Accounting, and Statistics. The accounting program for the bachelor's degree requires four years, the first two years being common for all four departments; the last two years differ for each major. A list of the requirements for the bachelor's degree in accounting[12] is presented in Appendix 4.

Iraq

The analysis of the requirements for the bachelor's degree in accounting in Iraq is based on the accounting program of the College of Administration and Economics of the University of

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[10] *Yarmouk University Catalogue* (1985/1986).
[11] Adnan M. Abdeen and Ugur Yavas, "Current Status of Accounting Education in Saudi Arabia," *International Journal of Accounting* (Spring 1986), 155–73.
[12] *Libyan University Bulletin* (1979).

Baghdad. In 1963 the College of Commerce and Economics was divided into two independent colleges, one of which was the College of Commerce; it eventually became the College of Administration and Economics. The College presently consists of the departments of Accounting, Business Management, Economics, and Business Statistics. Appendix 5 lists the requirements for the bachelor's degree in accounting. Requirements for the bachelor's degree include four academic years with the first two years generally the same for all departments.[13]

Kuwait

The analysis of the requirements for the degree of Bachelor of Commerce in Accounting in Kuwait is based on the requirements for the degree at Kuwait University. The Faculty of Commerce, Economics and Political Science of Kuwait University was established in 1967. The university now offers course work in accounting, management, economics, insurance, statistics, public administration, and political sciences.[14] Appendix 6 lists the requirements for the Bachelor of Commerce degree in Accounting.

DISCUSSION OF RESULTS OF THE STUDY
Curriculum

The requirements for the bachelor's degree in accounting in the universities in each of the six Arab countries are compared with the common body of knowledge recommended by Roy and MacNeill and with the Beamer Report (Exhibit 6). In the six Arab countries examined, the percentage of accounting courses to the total requirements is rather high relative to the recommendations of the Beamer Report. The percentage ranged from 32.6 in Libya to 43.2 in Egypt.

To determine whether the percentage of the number of hours in each accounting area to the total accounting courses offered in the six Arab universities studied is similar to those offered by schools in developed countries, the accounting courses recommended in Beamer's model were compared with those of the six countries studied (Exhibit 7). The percentage of financial accounting courses to the total in accounting for the Arab universities is smaller than that in Beamer's four-year model, but the percentage

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[13] *University of Baghdad Catalogue* (1986).
[14] Shuaib A. Shuaib, "Accounting Education in the Middle East: The Case of Kuwait," *The Recent Accounting and Economic Developments in the Middle East* (Urbana, Ill.: University of Illinois Center for International Education and Research in Accounting, 1985).

Exhibit 6. Accounting Degree Requirements in Selected Arabic Countries
(Percentages of total hours required)

Roy & MacNeill Report	The Beamer Report	Egypt (Cairo U.)	Jordan (Yarmouk U.)	Saudi Arabia (King Abdul-Aziz U.)	Libya (Libyan U.)	Iraq (Baghdad U.)	Kuwait (Kuwait U.)
Humanities	7.5	0	7.3	11.2	11.7	2.9	15.0
Economics	10.0	10.8	4.8	9.5	16.1	4.3	7.5
Behavioral Science	5.0	2.7	0	0	0	4.3	2.5
Law	3.4	6.8	0	7.1	2.9	2.9	5.0
Mathematics, Statistics, and Probability	15.0	10.8	7.3	9.5	14.7	5.8	12.5
Business	20.8	25.7	24.5	16.7	22.0	27.5	10.0
Accounting	20.8	43.2	41.5	38.1	32.6	40.6	35.0
Other — General education courses and electives	17.5	0	14.6	7.9	0	11.7	12.5
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Exhibit 7. Accounting Courses

Course*	The Beamer Report		Egypt (Cairo Univ.)		Jordan (Yarmouk Univ.)		Saudia Arabia (King Abdul-Aziz Univ.)		Libya (Libyan Univ.)		Iraq (Baghdad Univ.)		Kuwait (Kuwait Univ.)	
	Hrs	%	Hrs	%	Hrs	%	Hrs	%	Hrs	%	Hrs	%	Hrs	%
Financial	6	27.4	3	10.3	9	20.0	8	19.0	5	26.3	6	27.4	6	16.7
Cost/Managerial	3	13.6	9	31.1	12	26.6	6	14.3	4	21.1	5	22.7	6	16.7
Taxes	3	13.6	6	20.7	3	6.7	0	0	0	0	0	0	0	0
Auditing	3	13.6	4	13.8	3	6.7	6	14.3	2	10.5	3	13.6	3	8.3
Systems	4	18.2	3	10.3	0	0	0	0	0	0	0	0	3	8.3
NFP	0	0	2	6.9	3	6.7	3	7.1	2	10.5	3	13.6	3	8.3
Environment-oriented courses	0	0	2	6.9	3	6.7	8	19.1	4	21.1	5	22.7	6	16.7
Electives	3	13.6	0	0	12	26.6	9	21.4	0	0	0	0	9	25.0
Others	0	0	0	0	0	0	2	4.8	0	0	0	0	0	0
	22	100.0	29	100.0	45	100.0	42	100.0	19	100.0	57	100.0	36	100.0

* Exclusive of principles of accounting

of cost/managerial accounting courses to total accounting courses was higher than that in Beamer's model. The curricula in the Arab universities included some environment-oriented accounting courses, such as agricultural accounting, oil and gas accounting, national accounting, cooperative accounting, Zakat accounting, and Islamic accounting systems. At least one course in government and not-for-profit organizations is required. Only Baghdad University requires a course in accounting theory.

These observations lead one to conclude that, for the six schools studied, accounting courses are to some extent designed to meet the local economic, social, and cultural environments of the country. In general, accounting in many Arab countries tends to emphasize procedures at the expense of broad concepts and theory.

Few courses in behavioral sciences, such as sociology and psychology; general education; history; arts; science; philosophy; and electives are offered (Exhibit 6). An accounting educational system that places excessive emphasis on accounting and inadequate emphasis on general education is likely to graduate skilled accounting technicians but is not likely to produce broadly educated human beings. The graduates from such narrow educational systems will not be able to appreciate their human cultural heritage or to provide the informational needs of society.

The academic coverage of economics in four of the six schools examined is less than the 10 percent recommended by the Beamer Report. Many consider economics the basis for business education in general, accounting in particular. Without a broad understanding of how the economy functions and how accounting information is used by business and government, the accounting graduate will not be able to provide the information needed by the economy. The same observation could be made concerning the lack of understanding of mathematics. In five schools the percentage of mathematics to total requirements is less than the 15 percent recommended by the Beamer model. It is comforting to note, however, that four universities of the six offer one or more courses in computer and information systems. Only King Abdul-Aziz University and Libyan University do not indicate such courses.

Four schools do not include the international dimension in their business and accounting curricula. Only Cairo University appears to have some international component as part of an economics course. Yarmouk University has a comparative accounting course, but it is not required, nor is it clear whether it is currently offered.

Three of the six universities surveyed (Yarmouk, King Abdul-

Aziz, and Libyan universities) require a research seminar course that appears to be equivalent to the typical business policy course offered in U.S. schools. It is not clear, however, whether this course, usually offered in the senior year, integrates the topics studied during the four-year program.

Faculty

The faculty plays a very important role in any educational system. In addition to teaching and doing research, they develop the curricula, write textbooks, participate in setting the goals and objectives of the educational system, and integrate the resources to achieve the system's goals and objectives. One of the most frequently cited problems in the educational systems of developing countries is the lack of qualified faculty (see Exhibit 8 for the student/faculty ratios in eight Egyptian and seven Jordanian universities). The data in Exhibit 8 indicate a severe lack of qualified faculty in the two countries; for example, the student/faculty ratio at Ain Shams University in Egypt is 135:1; it is 193:1 at the Intermediate University College in Jordan.

The percentage of faculty holding the doctoral degree is alarmingly low. The percentage at one Egyptian university, Zagazig University, is only 16.7 percent. The lack of qualified faculty in other Arab countries is even greater. For example, Yarmouk University is the only school in Jordan with accounting faculty members who hold the doctoral degree (Exhibit 8).

Most developing countries lack qualified accounting instructors due mainly to the low salaries paid professors. Furthermore, most professors in developing countries supplement their income by consulting or by having their own practice, which causes them to be less available to advise students, to participate in curriculum updating, to do research, or to attend professional meetings and continued education workshops and seminars. The lack of qualified faculty members and the need for faculty to supplement their income have a negative effect on the quality of education.

Other Factors

Another serious problem for schools in developing countries is the scarcity of textbooks that meet the educational needs of students in developing countries. Due to the lack of qualified faculty and the low salaries mentioned, faculty members do not have time to write accounting textbooks focused on the accounting needs of developing countries. Further, the scarcity of foreign currencies experienced by most of these countries prevents the schools from

Exhibit 8. Student/Faculty Ratios
Institutions in Egypt and Jordan Offering Degrees in Accounting

University	No. of students			No. of faculty				Student/Faculty ratio[a]
	U/grad	Grad	Total	Doctor	Master	Bachelor	Total	
Egypt								
Alexandria	3,859	40	3,899	21	11	26	58	122
Assuit	2,078	20	2,098	10	7	11	28	123
Suez Canal	754	125	879	11	13	4	28	37
Cairo	1,900	290	2,190	29	26	22	77	40
Tanta	2,655	52	2,782	13	21	24	58	82
Ain Shams	7,424	—	7,424	21	34	63	118	135
Mansoura	1,433	19	1,452	26	11	7	44	39
Helwan	643	—	643	20	5	8	33	26
Jordan								
Yarmouk	250	NA	250	4	—	3	7	63
Intermediate	580	NA	580	—	3	9	12	193
Khawarizimi	112	NA	112	—	2	2	4	56
Zarkha	25	NA	25	—	1	10	11	25
Intermediate								
Arabic	738	NA	738	—	12	—	12	62
Amman	161	NA	161	—	2	9	11	81
Kharnada	286	NA	286	—	2	7	9	143

Source: Leslie C. Schmide, *AMIDEAST, Directory of Academic and Technical Programs in Selected Middle Eastern and North African Countries* (Washington, D.C., AMIDEAST, 1985).
[a] Based on the number of faculty holding doctoral or master's degrees

purchasing up-to-date texts from developed countries. It is not unusual to find some textbooks that are ten, twenty, or thirty or more years out of date being used in developing countries. In addition, visual aids are either not available or are not used because of the size of classes. The opportunity for students to participate in class discussions or to interact with instructors is very limited. Computer facilities and other supporting equipment and resources are neither adequate nor usually up to date.

CONCLUSIONS AND RECOMMENDATIONS

Accounting is a product of its political, social, and economic environments and should be flexible enough to adapt to these differing influences. For accounting to do that requires professional accountants who understand their environment. To prepare such accountants, the educational system should be designed to ensure that its graduates have a broad and basic understanding of the political, social, and economic systems. The need for broadly educated accountants is nowhere more important than in the developing countries, such as those in the Arab world, where environments change constantly.

Liberal arts education must replace the rigid technical accounting education now dominant in the Arab world. Fewer accounting courses should be required; those that are required should be less procedural and more conceptually oriented. The Arab world needs educated accountants and policy makers who are able to help decision makers; it does not need technicians and bookkeepers.

Less emphasis should be placed on accounting for external reporting and financial auditing and more emphasis should be on managerial accounting, operational auditing, and other courses designed to meet the econmic, social, and cultural needs of each country. If the focus of accounting education is to be shifted from financial to management accounting, the accounting curriculum should be revised to include more courses in mathematics, statistics, and operations research. Additional courses in behavioral sciences and the humanities are also needed. The systems approach to accounting where the focus is on countries and their information needs should be adopted. The number of courses in economics should be increased and the topics should include microeconomics, macroeconomics, economic development, and international economics.

We recommend also the allocation of attention and resources to increase the number of qualified faculty. In the authors' opinion,

this is the most serious problem in accounting education in developing countries. The lack of qualified faculty can be attributed to inadequate compensation. Faculty find themselves forced to seek consulting jobs outside the educational institutions or to open their own accounting practices in order to supplement their income. Faculty members who have heavy responsibilities outside the teaching arena have very little time to devote to excellence in teaching, research, curriculum revision, and continuing education.

APPENDIX 1. BACHELOR OF COMMERCE DEGREE (ACCOUNTING) — CAIRO UNIVERSITY, EGYPT

First year; hours per week for twenty-six weeks (academic year)

	Lecture hours	Lab/ seminar hours	
Principles of Accounting I and II	3	2	
Principles of Management and Production Management	4	1	
Principles of Economics	3	—	
Principles of Law	2	—	
Pure Mathematics	2	2	
Economic Geography	2	—	
Foreign Language (English/French)	—	4	
Principles of Behavioral Sciences (Social Psychology)	2	—	
	18	9	27 hours
Second year			
Partnership and Corporation Accounting	3	1	
Marketing and Sales Management	3	1	
Money and Banking and International Trade	3	—	
Insurance	2	1	
Commercial Law	3	—	
Public Administration	2	—	
Mathematics of Finance	2	1	
Foreign Language (English/French)	—	4	
	18	8	26 hours
Third Year			
Governmental and National Accounting	2	1	
Principles of Cost Accounting	3	1	
Personnel and Human Management	2	1	
Purchasing and Inventory Management	2	1	
Finance and Financial Management	2	1	
Tax Accounting and Public Finance	3	1	
Statistics	2	1	
Auditing	2	1	
	18	8	26 hours

APPENDIX 1. (Cont.)

	Lecture hours	Lab/ seminar hours	
Fourth Year (accounting major only)			
Accounting Systems	3	1	
Managerial Accounting	3	1	
Cost Accounting	3	1	
Auditing	2	—	
Tax Accounting	3	1	
Operations Research	2	1	
Managerial Economics	2	1	
Accounting in Specialized Institutions (Financial and Cooperative Institutes)	2	1	
	20	7	27 hours
TOTAL	74	32	106 hours

Source: *College of Commerce Bulletin* (Cairo University, 1986).

APPENDIX 2. BACHELOR IN ACCOUNTING — YARMOUK UNIVERSITY, JORDAN

Subject	Hours/Week
Completion of University requirements	
Arabic	3
Military Science	3
Computer Science	3
Human and Social Sciences	3
Free elective	6
	18
Completion of the requirements of the faculty of Economics and Administrative Sciences	
Management	6
Economics	6
Math	3
Statistics	3
Computer and Information Science	3
English (Communication Skills)	3
	24

APPENDIX 2. (Cont.)

Subject	Hours/Week
Completion of the Department of Accounting requirements of eighty semester hours divided as follows	
Administrative Science courses	3
Research Methods	3
Marketing	3
Quantitative Analysis	6
Principles and Accounting I and II	3
Principles of Public Finance	3
Organizational Behavior	3
Buying and Warehouse Management	3
Systems Analysis	3
Personnel Management	3
Public Administration	3
Introduction to Finance	36
Accounting requirements	
Partnership Accounting	3
Banking Accounting	3
Specialized Financial Accounting	3
Tax Accounting	3
Managerial Accounting	3
Advanced Managerial Accounting	3
Cost Accounting	3
Auditing	3
Advanced Cost Accounting	3
Seminar and Research	3
Governmental Accounting	3
Accounting electives	12
	45
	123

Source: *Yarmouk University Catalogue* (1985/86).

APPENDIX 3. REQUIREMENTS FOR BACHELOR IN ACCOUNTING — KING ABDUL-AZIZ UNIVERSITY, SAUDI ARABIA

	Hours
Compulsory University requirements	
Islamic Studies 1, 2, 3, and 4	8
Arabic Language	3
English Language	3
	14
Compulsory College requirements	
Principles of Business Administration	3
Principles of Public Administration	3
Principles of Economics	3
Principles of Accounting I	3
	12

APPENDIX 3 (cont.)

	Hours
Compulsory nonbusiness courses	
Mathematics I and II	6
Statistics I and II	6
Legal Studies	6
Principles of Scientific Research	1
	19
Compulsory accounting courses	
Principles of Accounting II	3
Accounting for Proprietorship	3
Accounting for Partnership	3
Accounting for Corporation	2
Governmental Accounting	3
Auditing I	3
Auditing II	3
Cost Accounting I	3
Cost Accounting II	3
Mining and Petroleum Accounting	3
Zakat Accounting	2
Islamic Accounting Systems	3
Research Seminar	2
	36
Compulsory electives; choose nine hours from the following list of accounting courses	
Accounting for Financial Institution	3
Islamic Accounting Systems	3
Managerial Accounting	3
Advanced Applied Accounting	3
Governmental Auditing	3
Financial Statements Analysis	3
	9
Compulsory business courses	
Principles of Business Administration	6
Principles of Public Administration	6
Principles of Economics	6
Money and Banking	3
Production Management	3
Financial Management	3
Commercial Law	3
Public Finance	3
Principles of Computer Science	3
	36
Free Electives — 12 hours	
Any courses not included in the requirements of the University or the faculty. (This group will be ignored in computing the percentages of knowledge body.)	12
TOTAL	126

Source: *Academic Catalogue of King Abdul-Aziz University* (1985).

APPENDIX 4. BACHELOR OF ACCOUNTING — LIBYAN UNIVERSITY, LIBYA

	Lecture hours*	Lab hours*	
First year			
Principles of Accounting	3	2	
Principles of Economics	3	1	
Principles of Management	3	—	
Calculus and Business Math	3	1	
Statistics and Research Methods	2	1	
Economic Geography	2	—	
English Language	4	2	
	20	7	27 hours
Second year			
Financial Accounting	3	2	
Production Management	2	—	
Microeconomics	2	1	
Statistics II	2	1	
Calculus	3	1	
Principles of Civil Law	2	—	
Money and Banking	2	—	
English Language	4	1	
	20	6	26 hours
Third year — Accounting major			
Cost Accounting	2	1	
Tax Accounting	2	—	
Specialized Accounting (departments, branches, and cooperations)	2	1	
Macroeconomics	2	—	
Public Finance	2	—	
Personnel Management	2	—	
Libyan Economy	2	—	
	14	2	16 hours
Fourth Year — Accounting major			
Accounting for Financial and Insurance Cos.	2	1	
Accounting for Oil and Gas	2	1	
Auditing	2	1	
Managerial Accounting	2	—	
Insurance	2	—	
Financial Statement Analysis	2	—	
Government Accounting	2	—	
Research Seminar	—	5	
	14	8	22 hours
TOTAL	68	23	91 hours

Source: *Libyan University Bulletin* (1979).
* Hours are per week per academic year.

APPENDIX 5. BACHELOR IN ACCOUNTING — UNIVERSITY OF BAGHDAD, IRAQ

	Hours*
First year	
Principles of Accounting	3
Principles of Management	3
Economics	3
Statistics	2
English Language (Correspondence)	2
Principles of Business Law	2
National and Socialist Education	2
Mathematics	2
	19
Second year	
Marketing	3
Personnel Management	3
Uniform Accounting System	3
Organizational Behavior	3
Management Information Systems	3
National and Socialist Education	2
	17
Third year	
Advanced Accounting	3
Cost Accounting	3
Government Accounting	3
Financial Accounting	2
National Income Accounting	2
Computer Science	2
National and Socialist Education	2
	17
Fourth year	
Accounting Theory and Contemporary Problems	3
Managerial Accounting	2
Auditing	3
Specialized Accounting (Agriculture, Oil and Gas, and Coops)	3
Insurance	3
National and Socialist Education	2
	16
TOTAL	69

Source: *University of Baghdad Catalogue* (1986).
* Hours per week per academic year

APPENDIX 6. BACHELOR OF COMMERCE IN ACCOUNTING — KUWAIT UNIVERSITY, KUWAIT

	Hours/week
University requirements (30 semester hours)	
Compulsory courses	
Arabic Language	9
English Language	6
History of Arab Islamic Civilization	3
	18
Restricted electives	
Principles of Statistics	3
Introduction to Sociology/Psychology	3
Methods of Research/Statistical Mathematics	3
Introduction to Logic/Government and Politics	
of Kuwait	3
	12
Required common business courses (33 hours)	
Principles of Management	3
Principles of Marketing	3
Business Finance	3
Accounting Principles I and II	6
Accounting for Corporations	3
Principles of Economics I and II	6
Money and Banking	3
Law	3
Insurance Principles	3
	33
Accounting Department requirements (24 hours)	
Compulsory courses	
Accounting for Partnership	3
Cost Accounting	3
Principles of Auditing	3
Accounting Systems	3
Information Systems I	3
	15
Elective accounting courses	9
Complementary courses (21 hours)	
Compulsory courses (9 hours)	
Commercial Law	3
Managerial Accounting	3
Accounting for Government and Nonprofit Units	3
	9
Elective courses	
Mathematics of Finance/Statistics for Business	3
Production Management	3
Accounting for Financial Institutions	3
Quantitative Methods in Accounting	3
	12
Free electives of any University course	12
TOTAL	120

Source: Shuaib A. Shuaib, "Accounting in the Middle East: The Case of Kuwait," *The Recent Accounting and Economic Developments in the Middle East* (Urbana, Ill.: University of Illinois Center for International Education and Research in Accounting, 1986).

Accounting Research 1976 to 1985:
A Transatlantic Perspective

BIMAL K. PRODHAN and FOUAD K. ALNAJJAR*

Academic journals serve as media through which academics exchange new ideas and findings. If the course of human history is influenced by the growth of human knowledge, accounting history is also likely to be influenced by the growth of accounting knowledge. Academic accounting journals are repositories of new knowledge in the field. The influence of individual U.S. academic journals on accounting research has been documented by Chatfield, Dyckman and Zeff, and Heck and Bremser,[1] although the influence of academic research on accounting practice has been disputed by Watts and Zimmerman.[2] Boatsman suggested that even if practitioner self-interest is a descriptive determinant of changes in accounting practice, practitioners have utilized the results of accounting research as a rationale to justify accounting practices.[3]

In addition to these studies, which considered individual journal

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[1] M. Chatfield, "The Accounting Review's First Fifty Years," *Accounting Review* (January 1975), 1–6; T. R. Dyckman and S.A. Zeff, "Two Decades of the Journal of Accounting Research," *Journal of Accounting Research* (Spring 1984), 225–297; and J. L. Heck and W. G. Bremser, "Six Decades of the Accounting Review: A Summary of Author and Institutional Contributors," *Accounting Review* (October 1986), 735–44.

[2] R. L. Watts and J. L. Zimmerman, "The Demand for and Supply of Accounting Theories: The Market for Excuses," *Accounting Review* (April 1979), 273-305.

[3] J. R. Boatsman, "Some Perspectives on Accounting Research" in R. D. Nair and T. H. Williams, eds., *Perspectives on Research* (Madison: University of Wisconsin, 1980), 1–12.

influences, prior analyses of accounting research included studies of (1) the perceptions of journal quality by Benjamin and Brenner, Howard and Nikolai, and Nobes[4]; (2) journal authorships by Windal, Williams, and Jacobs et al.[5]; (3) the impact of library collections by Urbanic[6]; and (4) accounting departments (i.e., departments' influence on published research, types and nature of manuscript, desired journal, as well as productivity) by Bazley and Nikolai, and Andrews and McKenzie.[7] None of these studies, however, considered trends in research topics in journals in different countries. This study is an attempt to address this lack.

A transatlantic perspective is viewed as relevant in order to evaluate the influence of non–U.S. journals on a discipline that is increasingly transnational, and to document the unifying aspects of accounting research. Topical analysis has been chosen as an appropriate area to investigate in order to identify the changes in emphasis in accounting research that may indicate future changes in accounting practice. A trend analysis of accounting articles may also lead to an examination of the social purpose of academic accounting journals.

Critics, such as Popper,[8] have noted the poverty of historicism, and Brown has called for a modest acceptance of historicism.[9] Caution is necessary in attempting to extrapolate trends. According to Gabor, "Exponential curves grow into infinity only in mathematics. In the physical world they either turn round and saturate

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[4] J. J. Benjamin and V. C. Brenner, "Perceptions of Journal Quality," *Accounting Review* (April 1974), 360–62; T. P. Howard and L. A. Nikolai, "Attitude Measurement and Perceptions of Accounting Faculty Publication Outlets," *Accounting Review* (October 1983), 765–776; and C. W. Nobes, "International Variations in Perceptions of Accounting Journals," *Accounting Review* (October 1985), 702–5.

[5] F. W. Windal, "Publishing for a Varied Public: An Empirical Study," *Accounting Review* (July 1981), 653–58; P. F. Williams, "A Descriptive Analysis of Authorship in the Accounting Review," *Accounting Review* (April 1985), 300–313; and F. A. Jacobs, A. L. Hartgraves, and L. H. Beard, "Publication Productivity of Doctoral Alumni: A Time Adjusted Model," *Accounting Review* (January 1986), 179–87.

[6] F. R. Urbanic, "University Library Collections of Accounting Periodicals," *Accounting Review* (April 1983), 417–27.

[7] J. D. Bazley and L. A. Nikolai, "A Comparison of Published Accounting Research and Qualities of Accounting Faculty and Doctoral Programs," *Accounting Review* (July 1975), 605–10; W. T. Andrews and P. B. McKenzie, "Leading Accounting Departments Revisited," *Accounting Review* (January 1978), 135–38.

[8] K. R. Popper, *The Poverty of Historicism* (London: Routledge and Kegan Paul, 1960).

[9] H. 1. Brown, "For a Model Historicism," *The Monist*, vol. 60 (1977), 540-55.

or breakdown catastrophically."[10] Trend analysis has been used since "the first step in understanding any process should be an understanding of its product."[11]

THE RESEARCH

Journals selected for this investigation were four major accounting journals, two from the United States — the *Journal of Accounting Research* (JAR) and *The Accounting Review* (AR) — and two from the United Kingdom — *Accounting and Business Research* (ABR) and the *Journal of Business Finance and Accounting* (JBFA). These journals are among the most widely regarded and widely cited, and they appear to reflect the major accounting research.[12] The years 1976 to 1985 were chosen for the study. A shorter time span would have been less reliable for trend extrapolation, and a much longer time span would have reduced the sample size considerably.[13] Only main articles were included; 1,265 were published in the four journals in the ten-year period. All notes, comments, and replies were excluded.

Each article was categorized in two ways: into empirical or conceptual categories and into one of twenty topical areas. The empirical category included data management and hypothesis testing; the conceptual category was defined as descriptive, literature-review, prescriptive, and normative articles.

The designation of articles into topical categories proved difficult; no matter which basis was adopted, the designation was necessarily subjective. Dyckman and Zeff used nine categories: interdisciplinary borrowing, mathematical and nonmathematical, mathematical modeling, conceptual development, empirical, normative, history, education, and other.[14] Brown and Gardner classified articles into four major areas: capital-markets, behavioral, agency, and time-series.[15] Where none of these four classifications were applicable,

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[10] A. Gabor, *Innovations: Scientific, Technological and Social* (Oxford: Oxford University Press, 1970), 101.

[11] K.R. Popper, *Objective Knowledge: An Evolutionary Approach* (Oxford: Clarendon Press, 1972), 114.

[12] Howard and Nikolai, "Attitude Measurement and Perceptions of Accounting Faculty Publication Outlets, "765–776; Nobes, "International Variations in Perceptions of Accounting Journals."

[13] The founding of the four journals was as follows: *Accounting Review*, 1926; *Journal of Accounting Research*, 1963; *Accounting and Business Research*, 1969; and *Journal of Business, Finance and Accounting*, in its present form, 1974.

[14] Dyckman and Zeff, "Two Decades of the Journal of Accounting Research," 228.

[15] L. B. Brown and J. C. Gardner, "Using Citation Analysis to Assess the Impact of Journals and Articles on Contemporary Accounting Research (CAR)," *Journal of Accounting Research* (Spring 1985), 84-101.

special categories (e.g., price level, income theory) were used. Articles that involved more than one topical area were categorized according to what appeared to be the major focus or impact. In the current study, each article was classified in one topical area only. Twenty detailed topical categories were used (see the Appendix).

ANALYSES

The data base described earlier was analyzed to identify trends in topics, trends in empirical articles, and degrees of consensus among journals.

Topical Trends

All 1,265 main articles published in the four journals were analyzed according to the twenty categories,[16] and to empirical or conceptual categories (see Exhibit 1, from which Exhibit 2 was derived).

To identify trends in each of the topical areas, the time series of total articles published in each area was subjected to a regression anlaysis to derive the corresponding intercepts, slopes, and R^2 (see Exhibit 3 for the results of these regression analyses). According to the data in Exhibit 3, auditing is the most popular topic; the price level topic is the least popular. Although a ranking based on the number of articles published indicates the current popularity of topics, such ranking alone cannot indicate past or future popularity. To assist in the visualization of the direction and magnitude of changes in topical preferences, the data in Exhibit 3 are presented in schematic form (Exhibit 4). For all four journals, Topics 2, 16, and 1 (auditing, security prices, and agency) have increased in popularity, but Topics 13, 5, 3, and 9 (price levels, corporate finance, budgets, and information systems) have declined in popularity, with Topic 13, price levels, the least popular. Perhaps falling inflation rates during much of this decade discouraged price level-related research. The extreme popularity of auditing might be explained by the increased funding of research by the auditing profession. Developments in expert systems and artificial intelligence may also have opened new horizons for researchers.

Although the slope function indicates the rate of change in popularity, the intercept term can also indicate the state of research activities in each category at the beginning of the decade. Topic 13, price levels, was ranked highest, followed by Topics 5, 3, and

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[16] Nineteen identified categories accounted for 97.9 percent of the 1,265 main articles; 26 articles spanned many topical areas simultaneously and were classified as miscellaneous, which accounted for 2.1 percent of all main articles.

Exhibit 1. Analysis of Main Articles According to Topic and Empirical or Conceptual Category: 1976 to 1985

Topic No.	'76 E	'76 C	'76 T	'77 E	'77 C	'77 T	'78 E	'78 C	'78 T	'79 E	'79 C	'79 T	'80 E	'80 C	'80 T	'81 E	'81 C	'81 T	'82 E	'82 C	'82 T	'83 E	'83 C	'83 T	'84 E	'84 C	'84 T	'85 E	'85 C	'85 T	'76-'85 E	'76-'85 C	'76-'85 T
1		2	2				1		1		3	3				1	1	2	1	1	2	2		2	1	2	3	6	3	9	12	14	26
2	5	6	11	6	11	17	7	8	15	2	9	9	9	7	16	12	3	15	17	6	23	10	2	12	12	12	23	16	8	24	100	61	161
3	2	5	7	3	8	11	7	8	15	6	6	6	1	2	3	3	6	9	2	4	6	4	5	9	2	2	2	3	4	7	28	50	78
4		3	3	1		1	7		2							1	1	2	4		4							4		4	4	12	16
5	6	8	14		11	11		1					2	7	9	5	7	8	2	4	8	3	7	10	2	4	6		1	1	25	71	96
6	3	7	10	4	6	10	6		12	2	9	11	10	2	12	6	7	11	6	5	11	5		6	11	2	13	6	2	7	67	32	99
7	3	1	4	3		3	4	1	5	6		6	2	5	2	3		2	7		7	4		5	11		11	4		5	47	3	50
8		3	3		5	5		2	5		13	13		5	5		12	12		8	8		6	6	4	4	4		4	4	1	62	63
9	4	7	11	6	9	15	5	4	9	6	5	11	3	8	14	4	5	9	7	4	11	3	13	16	4	6	10	4	4	8	61	53	114
10		2	2								1			1	1					4	4	2		2	6	4	10	2		4	12	4	16
11	1	1	2	5		6	1	1	2	2			2	1	3	4	3	7	2	3	5	4	1	5				2	1	3	27	16	43
12	1	3	4	2		2	1	2	3	1	5		3	6	3	1	2	1	1	4	5	1		1	3		2	2	4	6	7	24	31
13	6	25	31	2	14	16	8	6	14	3	5	5	3	6	9	2	2	4	2	6	8	2	2	2	3	3	6	3		3	34	70	104
14	1		1	3		3	6	1	7	2		2	2	2	2	2	1	3	2	2	4	2	2	4	5		5	3		3	28	6	34
15		1	1		1			2	3	5		5		1	1	2	2	3	2	2	4	3	4	4	3		4	2	1	3	7	22	29
16	6		6	6			16	1	17	6		8	11		11	10	2	12	11	1	12	10	1	11	15		15	15		15	106	8	114
17	1	2	3		1		1		1		2	2	2	2	4	2	2	7	2	2	4	2	2	4	2	1	3		1	1	16	17	33
18	3	1	4	6	2	6	3	3	4	3	3	6	2	4	6	5	5	5	2	1	3	2	2	4	2	6	2	6		7	21	22	43
19	1	6	7	3	8	11	7	7	7	1	6	6	8	8	8	5	5	9	2	3	5	4	9	13	3	6	9	6	7	13	24	65	89
20	1	3	4	1	1	2	2	3	5	1	2	2	1		1	1	1	2	2	3	4	4		4	3		9	3		4	10	16	26
Total	44	87	131	43	86	129	68	57	125	50	70	120	55	58	113	60	64	124	67	67	134	71	49	120	84	47	131	95	43	138	637	628	1265

E: Empirical; C: Conceptual; T: Total

Each main article is assigned only one topic.

Journals included *Accounting and Business Research*, *Journal of Business Finance and Accounting*, *The Accounting Review*, and the *Journal of Accounting Research*.

Exhibit 2. Topics Ranked According to Number of Articles: 1976 to 1985

Rank	Articles Total	Empirical	Topic no.	Description
1	161	100	2	Audit
2	114	61	9	Information system
2	114	106	16	Security prices
4	104	34	13	Price level
5	99	67	6	Disclosure
6	96	25	5	Corporate finance
7	89	24	19	Valuation/income theory
8	78	28	3	Budget/cost
9	63	1	8	History
10	50	47	7	Forecast evaluation
11	43	21	18	Tax
11	43	27	11	Not-for-profit
13	34	28	14	Ratios/bankruptcy
14	33	16	17	Standards/policy choice
15	29	7	15	Research method/output
16	31	7	12	Performance measurement/control
17	26	12	1	Agency theory
17	26	10	20	Miscellaneous
19	16	4	4	Cash flow
19	16	12	10	Inventory
	1,265	637		

9 (corporate finance, budget/cost, and information systems). These four topics (13, 5, 3, and 9) are in both high intercept and low slope categories simultaneously, indicating a glorious past and a dim future.

In summary, the two extremes are Topic 2, auditing, which has both a high slope and a high intercept showing its continuing popularity, and Topic 13, price levels, which has the largest negative slope and the largest positive intercept, indicating its great popularity at the beginning of the decade and then a very steep decline. The data in Exhibit 1 also confirm the change in fortunes of these two topics. In 1976, thirty-one articles on price levels and eleven on auditing were published. In 1985, twenty-four articles focused on auditing; the number of articles concerning price levels had dropped to four.

Two other topics deserve special mention. Topic 1, agency, has a low intercept, but a high slope, confirming that it is an area with great promise. Topic 16, security prices, has an intercept in the medium category with a high slope, confirming its origin in the late sixties and its continuing popularity. Perhaps the availability

Exhibit 3. Topical Trends: 1976 to 1985

	Topic	Intercept	Slope	R^2	F
Agency	1	−0.67	+0.60	0.48	7.38*
Auditing	2	+9.13	+1.27	0.48	7.38*
Budget	3	+10.67	−0.52	0.19	1.88
Cash flow	4	+1.60	0.00	0.00	0.00
Corporate finance	5	+13.53	−0.71	0.77	26.78†
Disclosure	6	+9.20	+0.13	0.03	0.25
Forecast evaluation	7	+3.00	+0.36	0.18	1.76
History	8	+5.53	+0.14	0.01	0.08
Information systems	9	+12.47	−0.19	0.05	0.42
Inventory	10	+1.07	+0.10	0.03	0.25
Not-for-profit	11	+2.40	+0.35	0.17	1.64
Performance measurement	12	+2.73	+0.14	0.08	0.70
Price level	13	+22.67	−2.23	0.66	15.53†
Ratios/bankruptcy	14	+2.87	+0.10	0.03	0.25
Research method/output	15	+1.47	+0.26	0.30	3.43
Security prices	16	+7.40	+0.73	0.37	4.70
Standards/policy choice	17	+3.60	−0.05	0.00	0.00
Tax	18	+3.73	+0.10	0.03	0.25
Valuation/income theory	19	+6.73	+0.39	0.19	1.88
Miscellaneous	20	+3.27	−0.12	0.06	0.51

Total number of main articles published in all four journals
d.f.: n − 2 = 8
* Significant at .05
† Significant at .01

of data base tapes for security prices has made research easier. Also, empirical research results on this topic, if done well, seem publishable regardless of the outcome: 92.9 percent of all articles on security prices are of an empirical nature.

Trends in Empirical Articles

Until the sixties, accounting research was mainly a priori in nature; its only outlet was *The Accounting Review.* Devine regretted this a priori nature because it revealed "a heavy handed crudity that is beyond belief,"[17] and he called for empirical research. He was not alone in calling for more empirical research,[18] and these calls appear not to have been in vain. The *Journal of Accounting Research,* originally published jointly by the London School of Economics and the University of Chicago but now published by the latter, filled this void in 1963 with its suppplements on "empirical

[17] C. Devine, "Research Methodology and Accounting Theory Formulation," *Accounting Review* (July 1960), 387–99.
[18] R. Mautz has made similar observations; see "Accounting as a Social Science," *Accounting Review* (April 1963), 317–25.
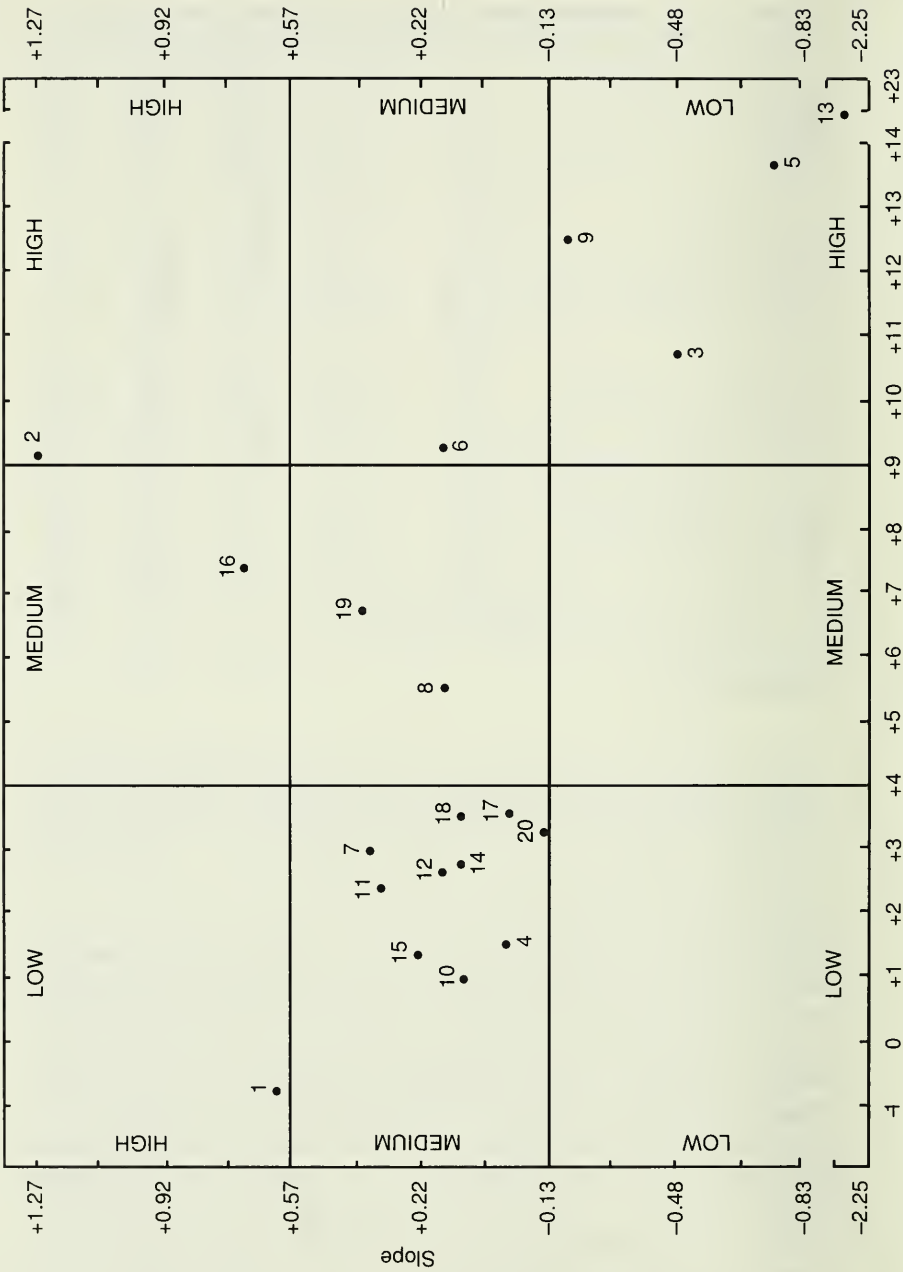
research." The influence of JAR on accounting literature has been documented by Dyckman and Zeff.[19]

Although the march of empiricism on both sides of the Atlantic during the ten years 1976 to 1985 may not be surprising, the speed with which it has gathered momentum is surprising (see Exhibit 5). During the decade, 50.4 percent of all main articles published in the four journals were of an empirical nature, with a steady movement from 33.6 percent in 1976 to 68.8 percent in 1985 for this type of research.

The largest number of empirical articles was published on the following topics: forecast evaluation (Topic 7) and security prices (Topic 16). Each scored over 90 percent of the published articles. On the other hand, history (Topic 8) scored the lowest (1.5 percent), followed by Topic 12, performance management and controls, 22.6 percent (Exhibit 2). Even considering that some topics are more amenable to empirical research than others, such disparity in empirical research among topical areas can be a cause for concern.

There are differences among journals. For example, each of the four journals published approximately a quarter of the total articles in each category, but the differences in the number of empirical articles among the journals are evident. The two U.S. journals had a significantly larger number of empirical articles with JAR leading with 70.6 percent; in the United Kingdom, JBFA appears to be the more empirically inclined journal with 46.1 percent of such aricles. See Exhibit 6.

A trend analysis of the empirical content of journals reveals some undercurrents. The time series of the empirical contents of journals has been determined (Exhibit 7); from these data intercepts, slopes, and R^2 have been computed for each of the journals (Exhibit 8); regression lines illustrate this information (Exhibit 9). The rate of increase in empirical articles in JAR is only 0.72 percent per year; it is 5.3 percent per year in JBFA. The other three journals seem to be becoming as empirical oriented as JAR.

Degrees of Consensus among Journals

As noted, the general trend in empiricism consisted of varying degrees of changes in emphases. JAR seems to have set the pace in empirical research in accounting; the other three journals have tended to follow this direction. The total number of articles published during the decade in the twenty topical categories are further classified as empirical or conceptual (see Exhibit 10). The

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[19] Dyckman and Zeff, "Two Decades of the Journal of Accounting Research."

Exhibit 5.

		'76	'77	'78	'79	'80	'76-80	'81	'82	'83	'84	'85	'81-85	'76-85
ABR	E	5	6	9	7	6	33	5	10	10	16	14	55	88
	C	20	24	16	23	20	103	28	22	21	17	18	106	209
	T	25	30	25	30	26	136	33	32	31	33	32	161	297
	E%	20.0	25.0	36.0	23.3	23.1	24.2	15.2	31.3	32.2	48.5	43.8	34.2	29.6
JBFA	E	12	7	13	11	13	56	15	11	24	24	28	102	158
	C	31	23	20	18	21	113	15	23	14	13	7	72	185
	T	43	30	33	29	34	169	30	34	38	37	35	174	343
	E%	27.9	23.3	39.4	37.9	38.2	33.1	50.0	32.3	63.2	64.9	80.0	58.6	46.1
U.K.	E	17	13	22	18	19	89	20	21	34	40	42	157	246
	C	51	47	36	41	41	216	43	45	35	30	25	178	394
	T	68	60	58	59	60	305	63	66	69	70	67	335	640
	E%	25.0	21.7	37.9	30.5	31.7	29.2	31.7	31.8	49.3	57.1	62.7	46.8	38.4
AR	E	13	17	26	11	12	79	20	17	16	14	15	82	161
	C	31	30	15	18	7	101	10	7	5	7	8	37	138
	T	44	47	41	29	19	180	30	24	21	21	23	119	299
	E%	29.5	36.2	63.4	37.9	63.2	43.9	66.7	70.8	76.2	66.7	65.2	68.9	53.8
JAR	E	14	13	20	21	24	92	20	29	21	30	38	138	230
	C	5	9	6	11	10	41	11	15	9	10	10	55	96
	T	19	22	26	32	34	133	31	44	30	40	48	193	326
	E%	73.7	59.1	76.9	65.6	70.6	69.2	64.5	65.9	70.0	75.0	79.2	71.5	70.5
U.S.	E	27	30	46	32	36	171	40	46	37	44	53	220	391
	C	36	39	21	29	17	142	21	22	14	17	18	92	234
	T	63	69	67	61	53	313	61	68	51	61	71	312	625
	E%	42.9	43.5	68.6	52.4	67.9	54.6	65.6	67.6	72.5	72.1	74.6	70.5	62.6
Total	E	44	43	68	50	55	260	60	67	71	84	95	377	637
	C	87	86	57	70	58	358	64	67	49	47	43	270	628
	T	131	129	125	120	113	618	124	134	120	131	138	647	1,265
	E%	33.6	33.3	54.4	41.6	48.7	42.1	48.4	50.0	59.2	64.1	68.8	58.3	50.4

E: Empirical
C: Conceptual
T: Total

Exhibit 6. Analysis of Published Articles by Country: 1976 to 1985

| | Numbers | | Percentages | |
	E	C	E	C
ABR	88	209	29.6	70.4
JBFA	158	185	46.1	53.9
U.K.	246	394	38.4	61.6
AR	161	138	53.8	46.2
JAR	230	96	70.6	29.4
U.S.	391	234	62.6	37.4
Total	637	628	50.4	49.6

E: Empirical
C: Conceptual

**Exhibit 7. Time Series of Empirical Content
(Percentages by Journal — Summary)**

	ABR	JBFA	Total U.K.	AR	JAR	Total U.S.	Total all
1976	20.0	27.9	25.0	29.5	73.7	42.9	33.6
77	25.0	23.3	21.7	36.2	59.1	43.5	33.3
78	36.0	39.4	37.9	63.4	76.9	68.5	54.4
79	23.3	37.9	30.5	37.9	65.6	52.4	41.6
80	23.1	38.2	31.7	63.2	70.6	67.9	48.7
1976-80	24.2	33.1	29.2	43.9	69.2	54.6	42.1
1981	15.2	50.0	31.7	66.7	64.5	65.6	48.4
82	31.3	32.3	31.8	70.8	65.9	67.6	50.0
83	32.2	63.2	49.3	76.2	70.0	72.5	59.2
84	48.5	64.9	57.1	66.7	75.0	72.1	64.1
85	43.8	80.0	62.7	65.2	79.2	74.6	68.8
1981-85	34.2	58.6	46.8	68.9	71.5	70.5	58.3
1976-85	29.6	46.1	38.4	53.8	70.5	62.6	50.4

Note: *Accounting and Business Research,* ABR; *Journal of Business Finance and Accounting,* JBFA; *The Accounting Review,* AR; and the *Journal of Accounting Research,* JAB.

topics are ranked as to the number of articles published in each of the four journals (Exhibit 11). This ranking indicates significant differences. Topic 2, auditing, is the most frequent topic in both U.S. journals. Of the U.K. journals, however, Topic 5, corporate finance, is the most frequent topic in JBFA; Topic 8, history, is the most frequent topic in ABR. Topic 13, price level, ranks as the second most popular topic in both U.K. journals, and topic 16, security prices, is near the top in all of the journals but ABR.

**Exhibit 8. Trends in Empirical Content
(Percentage by Journal: 1976 to 1985)**

Journal	Intercept	Slope	R^2	F
$\hat{Y}_{ABR}$	= 17.30	+2.28$_t$	0.42	5.79*
$\hat{Y}_{JBFA}$	= 16.57	+5.30$_t$	0.77	26.78†
$\hat{Y}_{U.K.}$	= 16.34	+3.93$_t$	0.74	22.77†
$\hat{Y}_{AR}$	= 34.20	+4.25$_t$	0.61	12.51†
$\hat{Y}_{JAR}$	= 66.11	+0.72$_t$	0.12	1.09†
$\hat{Y}_{U.S.}$	= 44.44	+3.33$_t$	0.71	19.59†
$\hat{Y}_{TOTAL}$	= 30.83	+3.52$_t$	0.83	39.06†

d.f.: n − 2 = 8;
* Significant at .05
† Significant at .01

To determine whether unity exists among the divergences, a coefficient of concordance was computed for the four journals. The Kendall Coefficient of Concordance (W) measures the extent of association among several sets of rankings of entities. This measure is useful to determine the agreement among several judges or the association among three or more variables.[20] The distribution of chi-square ranks approaches the ordinary chi-square distribution as the number of sets of ranks increases.[21] The coefficient of concordance (W) of the topical rankings indicates a measure of agreement at W = 0.44, which is significant at the .02 level, assuming that a chi-square test was performed (see Exhibit 12).

CONCLUSIONS

The data base used for this research includes some limitations: (1) the small number of journals (only four); (2) the cross-country comparisons that are necessarily subject to institutional differences — for instance, accounting and finance in the United Kingdom generally form a single academic department but are usually separate in the United States; (3) the lack of consideration of the length or the quality of articles; and (4) because of cultural and language affinities between the United Kingdom and the United States, the large number of articles published in the United Kingdom authored by U.S. citizens with the flow of articles from

[20] S. Siegel, *Nonparametric Statistics for the Behavioral Sciences* (New York: McGraw-Hill, 1956); and M. Kendall, *Rank Correlation Methods* (London: Charles Griffin, 1948).
[21] M. Friedman, "A Comparison of Alternative Tests of Significance for the Problem of m Rankings," *Annals of Mathematical Statistics*, vol. 11 (1940), 86–92.

Exhibit 9. Trends in Empirical Content Percentage: A U.K.-U.S. Perspective

Empirical content (%)

$$\hat{Y}_{JAR} = 66.11 + 0.72_t$$

$$\hat{Y}_{AR} = 34.20 + 4.25_t$$

$$\hat{Y}_{JBFA} = 16.57 + 5.30_t$$

$$\hat{Y}_{ABR} = 17.30 + 2.28_t$$

$$\hat{Y}_{U.S.} = 44.44 + 3.33_t$$

$$\hat{Y}_{U.K.} = 16.34 + 3.93_t$$
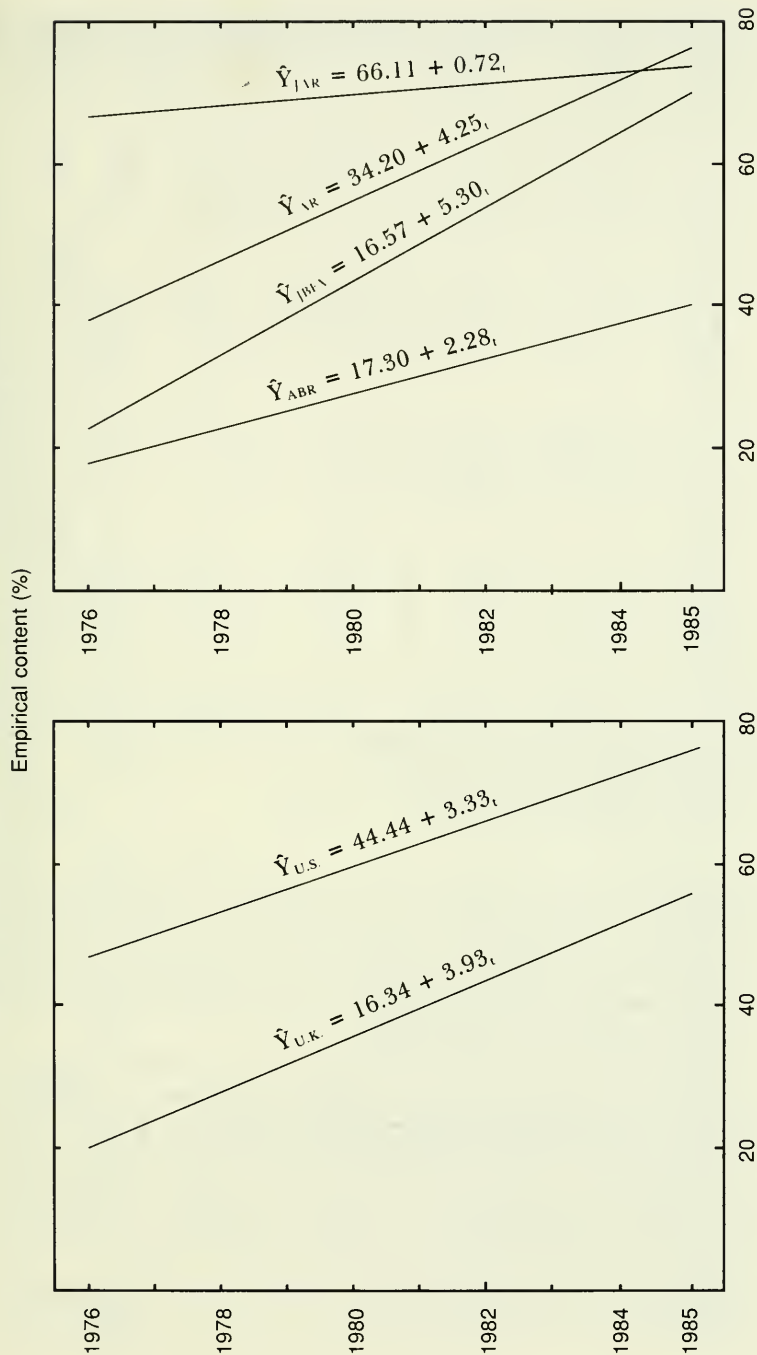
Exhibit 10. Number of Articles by Topics According to Journals: 1976 to 1985

Topic no.	ABR		JBFA		AR		JAR		Total	
	E	C	E	C	E	C	E	C	E	C
1	1	1	3	1	6	5	2	7	12	14
2	10	21	4	1	40	16	46	23	100	61
3	3	12	2	7	10	21	13	10	28	50
4	1	2	2	7		2	1	1	4	12
5	5	10	19	60		1	1		25	71
6	16	14	19	7	10	4	22	7	67	32
7	3		5	1	8		31	2	47	3
8	1	41		3		16		2	1	62
9	8	11	4	11	18	12	31	19	61	53
10						2	12	2	12	4
11	5	8	7	2	4	5	11	1	27	16
12	2	10	4	7	1	4		3	7	24
13	5	28	14	28	7	10	8	4	34	70
14	2		21	6	2		3		28	6
15		4		6	2	6	5	6	7	22
16	10	1	38	2	30	2	28	3	106	8
17	2	11	3	2	4	3	7	1	16	17
18	8	11	2	3	9	8	2		21	22
19	5	22	7	23	6	17	6	3	24	65
20	1	2	4	8	4	4	1	2	10	16
Total	88	209	158	185	161	138	230	96	637	628

Note: See Exhibit 7 for journal abbreviations.
E: Number of published articles categorized as empirical
C: Number of published articles categorized as conceptual
T: Total number of published articles

the United Kingdom into U.S. journals not so large. Given these limitations, the analyses of topical trends indicated an increase for certain topics and a decline for others. A growth trend in empirical research was confirmed for most of the topical areas and for all of the journals to varying degrees.

Topical trends are neither accidents nor the results of individual efforts. Insitutional forces may influence the types of manuscripts available. Institutional factors causing changes in a topic's popularity are likely. Williams has documented the institutional dominance of accounting research in the United States: "To the extent that specific technology is in vogue, a specific institution can produce a significant impact upon published research."[22] To the

[22] Williams, "A Descriptive Analysis of Authorship in the Accounting Review," 302.

Exhibit 11. Topics Ranked According to Journals: 1976 to 1985

Topic no.	ABR No. of articles	Rank	JBFA No. of articles	Rank	AR No. of articles	Rank	JAR No. of articles	Rank	Total No. of articles
1	2	18	4	19	11	10	9	11	26
2	31	3	5	15	56	1	69	1	161
3	15	8	9	10	31	3	23	6	78
4	3	15	9	10	2	17	2	17	16
5	15	8	79	1	1	20	1	20	96
6	30	4	26	6	14	9	29	5	99
7	3	15	6	13	8	12	33	3	50
8	42	1	3	15	16	8	2	17	63
9	19	6	15	7	30	4	50	2	114
10	0	20	0	20	2	17	14	7	16
11	13	10	9	10	9	11	12	8	43
12	12	12	11	9	5	16	3	14	31
13	33	2	42	2	17	6	12	8	104
14	2	18	27	5	2	17	3	14	34
15	4	14	6	13	8	12	11	10	29
16	11	13	40	3	32	2	31	3	114
17	13	10	5	15	7	15	8	13	33
18	19	6	5	15	17	6	2	17	43
19	27	5	30	4	23	5	9	11	89
20	3	15	12	8	8	12	3	14	26
Total	297		343		299		326		1,265

Exhibit 12. The Kendall Coefficient of Concordance (W)

Topic no.	Ranks* ABR (v)	JBFA (x)	AR (y)	JAR (z)	$R_j^†$	$R_j\text{-}\bar{R}_j$	$(R_j\text{-}R_j)^2$
1	18.5	19.0	10.0	11.5	59.0	17.0	289.00
2	3.0	16.5	1.0	1.0	21.5	20.5	420.25
3	8.5	11.0	3.0	6.0	28.5	13.5	182.25
4	16.0	11.0	18.0	18.0	63.0	21.0	441.00
5	8.5	1.0	20.0	20.0	49.5	7.5	56.25
6	4.0	6.0	9.0	5.0	24.0	18.0	324.00
7	16.0	13.5	13.0	3.5	46.0	4.0	16.00
8	1.0	16.5	8.0	18.0	43.5	1.5	2.25
9	6.5	7.0	4.0	2.0	19.5	22.5	506.25
10	20.0	10.0	18.0	7.0	65.0	23.0	529.00
11	10.5	11.0	11.0	8.5	41.0	1.0	1.00
12	12.0	9.0	16.0	15.0	52.0	10.0	100.00
13	2.0	2.0	6.5	8.5	19.0	23.0	529.00
14	18.5	5.0	18.0	15.0	56.5	14.5	210.25
15	14.0	13.5	13.0	10.0	50.5	8.5	72.25
16	13.0	3.0	2.0	3.5	21.5	20.5	420.25
17	10.5	16.5	15.0	13.0	55.0	13.0	169.00
18	6.5	16.5	6.5	18.0	47.5	5.5	30.25
19	5.0	4.0	5.0	11.5	25.5	16.5	272.25
20	16.0	8.0	13.0	15.0	52.0	10.0	100.00
					840.0		4,670.5

Correction (T) for tied ranks:
$T_v = \Sigma\ (t^3-t)/12$
$\quad = [(2^3-2)+(2^3-2)+(2^3-2)+(2^3-2)]/12 = 2.0$
$T_x = [(4^3-4)+(3^3-3)]/12 = 7.0$
$T_y = (2^3-2)/12 = 0.5$
$T_z = [(2^3-2)+(2^3-2)+(2^3-2)]/12 = 1.5$
$\quad\quad \Sigma_T T = 2 + 7 + 0.5 + 1.5 = 11.0$

Coefficient of concordance (W) corrected for ties:
$W = S\ /\ [(1/12)K^2(N^3-N) - K^2_T T]$
where
N = entities
K = sets of rankings.
$W = 4670.5\ /\ [1/12(4)^2\ (20^3-20) - (4(11)] = 0.44$
For N>7, $\chi^2 = S\ /\ [(1/12)KN\ (N+1)] = 33.36$
which is significant at .02 level for dFn-1 = 19.

Thus, significant unanimity exists among journals on the importance of topical areas.

* with adjustment for tied ranks.
†$R_j = v + x + y + z$
$\bar{R}_j = \Sigma R_j/N = 840/20 = 42$
$S = \Sigma(R_j-\bar{R}_j)^2 = 4670.5$

extent that an institutional element is present in accounting jour- nals, such journals may not represent independent standards of scholarship so much as they represent media for marketing insti- tutionally sanctioned ideas. The existence of institutional influences is neither wrong nor surprising. As Popper notes,

Science, and more specifically scientific progress, are the results not of isolated efforts but of the free competition of thought. For science needs even more competition between hypotheses and even more rigorous tests. And the competing hypotheses need personal representations, as it were: they need advocates, they need a jury, and even a public. This personal representation must be institutionally organized if we wish to ensure that it works.[23]

The relative dominance of institutions, such as Chicago and the *Journal of Accounting Research*, has been documented by Dyckman and Zeff.[24] The emergence of such institutions resulted from the void in empirical research in the sixties, which was documented by Devine and Mautz,[25] among others. Readers of journals have reported, however, that the pendulum may have swung too far toward empiricism, interdisciplinary borrowings, and rigorous re- search techniques at the expense of the classical, mainstream, conceptual, and "big" question, as Zeff noted.[26] The study reported here gathered data and identified some potential areas of research, but judgments as to the balance between empirical and conceptual research, between structuralism and absolutism, and between dif- ferent research topical categories remain a matter of value judg- ment.

---

[23] Popper, *The Poverty of Historicism*, 154–55.
[24] Dyckman and Zeff, "Two Decades of the Journal of Accounting Research."
[25] Devine, "Research Methodology and Accounting Theory Formulation"; and Mautz, "Accounting as a Social Science."
[26] S. A. Zeff, "A Retrospective," *Accounting Review* (January 1983), 129–34.

APPENDIX. LIST OF TOPICS

Number	Description
1	Agency theory
2	Auditing
3	Budget/cost
4	Cash flow
5	Corporate finance
6	Disclosure
7	Forecast evaluation
8	History
9	Information system
10	Inventory
11	Not-for-profit
12	Performance measurement/control
13	Price levels
14	Ratios/bankruptcy
15	Research method/output
16	Security prices
17	Standards/policy choice
18	Tax
19	Valuation/income theory
20	Miscellaneous

INSTRUCTIONS TO AUTHORS

All manuscripts submitted for consideration should be typed on 8½ x 11" paper and should be double-spaced throughout, including synopsis, footnotes, and bibliography. At least two copies should be submitted for review. Margins should be appropriately wide to facilitate editing. The title of the paper, the author's name, rank, and affiliation, and any acknowledgments should appear on the first page of the body of the manuscript. All pages, as well as bibliography, exhibits, and appendices, should be serially numbered. The beginning of each paragraph should be indented. Footnotes may be placed either at the bottom of the appropriate page, or on a separate page. Each manuscript should be accompanied by a brief synopsis of the article explaining its international significance.

HEADINGS

All major headings within the manuscript should be in capital letters. They should not be numbered. Subheadings should be in capital and lower case letters on a separate line beginning at the left margin. If third-level headings are used, they should begin at the left margin and should end with a period. The text will follow on the same line immediately.

EXHIBITS

Each exhibit should be titled and numbered. A textual reference should be made to each exhibit. It would be helpful if the author would indicate by marginal notation where each exhibit should be placed. These instructions will be followed as printing practices allow.

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Footnotes should be numbered consecutively throughout the manuscript with superscript arabic numerals. Citations should not be made in brackets in the text. Mathematical symbols should not have footnote numbers attached. Entries for books should include author's name, title of the work underlined, and, in parentheses, place of publication, name of publisher, and date of publication. For journals, author's name, title of article within quotation marks, title of journal underlined, date of issue in parentheses, and page numbers should be included. Please see the following examples.

[1] William A. Dymsza, Multinational Business Strategy (New York: McGraw-Hill, 1972), 49-53.

[2] Geoffrey Holmes, "Replacement Value Accounting," Accountancy (March 1972), 4-8.

BIBLIOGRAPHY

Manuscripts may include a bibliography at the end of the paper. If so, such references are not to be limited to those references cited in the text. Each entry should contain all data necessary for identification. Citations should be arranged in alphabetical order. Multiple works by the same author should be listed according to chronological order of publication. Examples are listed below.

Robert L. Aliber and Clyde P. Stickney. "Accounting Measures of Foreign Exchange Exposure — The Long and Short of It." Accounting Review, January 1975, 44–57.

American Institute of Certified Public Accountants. Accounting Research Bulletin No. 43. New York: AICPA, 1953.

_____. "Financial Statements Restated for General Price Level Changes." Statement of the Accounting Principles Board No. 3. New York: AICPA, 1969.

Leonard Lorensen and Paul Rosenfield. "Management Information and Foreign Inflation." Journal of Accountancy, December 1974, 98–102.

Lawrence Revsine. Replacement Cost Accounting. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

MATHEMATICAL NOTATION

Mathematical notation should be stated as simply as possible so as to simplify typesetting. Alignment should clearly indicate superscripts and subscripts. Equations which are numbered should have the numbers in parentheses flush with the right-hand margin.

In recent years a great deal of attention has been paid to those branches of learning which may have something to say to managers. While the economist has long shared the confidence of management, particularly in Germany, Italy, and the Netherlands, and while business economics and industrial economics have grown to be subjects in their own right, an equal interest is now arising, particularly in the English-speaking countries, in those aspects of management concerned with its human forces — with sociology, psychology, and the behavior of organizations undergoing technological change. These are the domains of the so-called managerial sciences. The recognition of these as subjects in their own right is having profound effects upon the managerial outlook; in particular the development of formal and mathematical modes of thought — as in operations research — has thrown new light on the practical solution of many management problems. There is today a universal need to extend the use of these methods, but it is just as necessary that the mathematician know the practical needs of the manager as that the manager recognize the power of these new forms of analysis. What is to be desired throughout the field is an integrated outlook, calling for close collaboration between the scientists and the managers of all countries, and based upon sound bargaining between theory and practice.

The magazine *Management International Review* would, on that account, claim to be the medium of exchange between practicing managers and research workers. It is devoted mainly to the nature and solution of management problems of business enterprises, corporations of public authorities, and other large-scale institutions. In addition, it gives particular attention to ideas and progress in the field of management education.

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VOLUME 23, NUMBER 2, SPRING 1988

THE INTERNATIONAL JOURNAL OF ACCOUNTING

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UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

THE INTERNATIONAL JOURNAL OF ACCOUNTING

EDUCATION AND RESEARCH

Contents

Note from the Editor:
Continuity and Change

With this issue, *The International Journal of Accounting Education and Research* concludes an important phase of its development. For twenty-three years, the *Journal* has attempted to provide articles of interest and value to professional and academic accountants concerned with the international dimension of accountancy. Certainly few would deny that there have been rapid changes in the environment of accounting during this period. Much of the change seems to have centered on what is called the international transactions of accounting. A review of the major changes in the past twenty-three years in the world financial markets, in the national economic policies of various countries, in the various tariff negotiations, in regional economic groupings, and in political events indicates that the environment of the contemporary accountant necessarily includes an international dimension.

The first twenty-three years of the *Journal* have seen the establishment of The International Accounting Standards Committee, the issuance of nearly thirty standards by that international body, and the strengthening of various regional accounting groups. In the academic area, the essential international dimension of business accounting and studies has been recognized. The American Assembly of Collegiate Schools of Business, the accrediting organization for schools of business in the United States, requires appropriate international exposure for undergraduate and graduate students within the programs of the schools being accredited. The Assembly has also undertaken the accreditation of accounting programs during the past several years. An international dimension also is a requirement for accreditation of an accounting program. A significant number of international accounting textbooks and books of readings have been published in addition to the numerous seminars and other programs with an international accounting focus. The American Accounting Association has organized an International

Accounting Section. These are but a few of the indications of the significant growth of the international emphasis in accounting during the past twenty-three years.

A review of the manuscripts published in the *Journal* in its first forty-six issues reveals a wide variety of topics. Yet a continuity of certain themes exists throughout the issues with the clear indication of a significant maturing and expansion of the professional area, international accounting. Many of the early articles were quite descriptive of national professional accounting organizations and local academic practices. Later manuscripts began to focus on such topics as the interaction of world financial markets and ethical considerations in the practice of accounting in an international environment. The Center is preparing a comprehensive Index of the articles published in the first twenty-three volumes of *The International Journal of Accounting Education and Research..* We plan for each subscriber to the *Journal* to receive this Index to allow them individually to note changes in topical themes and their frequency in the issues of the *Journal.*

The *Journal* began publication as a venture of uncertain life. Substantial gifts from two perceptive and generous accounting practitioners, Paul Grady and Ralph S. Johns, who were graduates of the University of Illinois, provided the essential capital for this new publication venture. The response from subscribers was positive and receipts provided the needed replenishment of working capital. The growth of the *Journal* has for some time prompted an interest in certain publication changes, such as improved printing procedures and a greater publication frequency. These changes begin with the publication of Volume 24, Number 1. The Center is pleased that the international publishing firm, Springer/Verlag, through its London office, will publish the *Journal* beginning with Volume 24, Number 1. Also, the *Journal* will now be published quarterly and will have a significantly expanded Editorial Review Board, a new Editorial Policy Board, and a Book Review section.

As the Editor of the *Journal* through these years, I wish to thank the many individuals who have submitted manuscripts for consideration for publication in the *Journal.* All of us are indebted to these authors. I also thank those many individuals who reviewed specific manuscripts as a member of the Editorial Review Board. In particular, I thank Professors Maureen Berry, Hanns-Martin Schoenfeld, and H. Peter Holzer of the University of Illinois, who have reviewed many manuscripts for the *Journal.* In addition, during the recent years of the publication of the *Journal*, Ms. JaNoel Lowe has proved invaluable in her role as

Associate Editor. She has been responsible for many improvements in the format and style of the *Journal* and has contributed in many ways.

We hope that the change to quarterly issues and the expanded format, beginning with Volume 24, will be pleasing to you, the readers of the *Journal*. We look forward to following the changes in international accounting practice and education in the forthcoming years with you.

V.K. ZIMMERMAN

University of Illinois
Urbana-Champaign

The Role of Conservatism in Determining the Accounting Lives of Fixed Assets

R.C. SKINNER*

A recent article supplied evidence that, at least to the end of fiscal year 1976/77, the accounting lives of fixed assets were only about half their actual lives.[1] The author showed that the depreciation charges reported by industrial and commercial companies in the United Kingdom were approximately the same as they would have been if the companies had used current cost accounting (CCA) together with realistic estimates of asset lives. A policy implication drawn from the analysis was that the adoption of CCA on its own, not accompanied by the use of more realistic life estimates, is likely to lead to CCA statements that (so far as depreciation charges and fixed asset values are concerned) are further removed from reality than the statements they are intended to supplement or replace.

In that article (hereafter, referred to as "the original article"[2]), the author examined two explanations of the phenomenon. One explanation was that the understatement of asset lives was a surreptitious way to allow for inflation. The seven years of data examined provided evidence that was contrary to that hypothesis. The second explanation was that the understatement was due to the influence of tax lives. This hypothesis was examined for the earliest of the seven years, namely 1961/62, which was the only year for which relevant data were available. It was also the earliest year for which the analysis in the original article could be performed. In that year, of the discrepancy between total economic life and total accounting life, only 8 percent could be accounted for as due to the influence of tax lives alone.[3] The author also noted that the data for the other six years examined

gave no sign of being influenced by the substantial reduction in tax lives that took place in late 1962.

There is additional evidence (not quoted in the original article) of the underestimation of asset lives in the United Kingdom. The results of the survey by Kirkman and Nobes and the study by Peasnell indicate that, in some large companies, substantial proportions of the fixed assets still in use were fully depreciated.[4] Data in recent issues of the *Survey of U. K. Published Accounts*[5] constitute an admission of understatement because significant proportions of the companies use different lives for CCA reporting and for historic cost accounting.

The asset lives underlying the economic data have, however, been revised, and the effects of the revision on the analysis are discussed first. Evidence that a similar degree of underestimation of asset lives probably exists also in the United States is then presented. The paper primarily concerns the reasons for the underestimation. In this connection, a questionnaire survey was conducted; its results are reported. The paper concludes with a recommendation for overcoming the problem of underestimation.

REVISED ECONOMIC DATA

The 1983 edition of the *National Income and Expenditure Blue Book* announced that the economic life estimates used had been reviewed and reduced.[6] This had the effects of increasing capital consumption and reducing capital stock. Revised figures for 1972 on were published for the first time in the 1983 *Blue Book*.[7] Data for the most recent five years covered in the original article have been recomputed. No attempt was made to convert the *Blue Book* data from a calendar year to a fiscal year basis: revised figures for one of the years (1971) needed were not published, and in the original article the conversion had made almost no difference to the figures. The weighted average total economic life over the years 1972 to 1976, implied by the revised *Blue Book* data, is now 29.2 years[8] (compared with

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[4] P.R.A. Kirkman and C.W. Nobes, "Problems of Depreciation under a C.C.A. System," *Accountancy* (February 1977), 40–45; and K.V. Peasnell, "The CCA Depreciation Problem: An Analysis and Proposal," *Abacus* (December 1977), 129

[5] L.C.L. Skerratt and D.J. Tomkin, eds., *Financial Reporting 1982-83: A Survey of U.K. Published Accounts* (London: ICAEW, 1982), 66; and *Financial Reporting 1983-84* (London: ICAEW, 1983), 61 (Short title: *Survey*).

[6] Central Statistical Office, *National Income and Expenditure, 1983 Edition* (London: HMSO, 1983), 114 (Short title: *Blue Book*).

[7] Ibid., 72-74.

[8] Figures for the individual years are:

	1972	1973	1974	1975	1976
Gross capital stock (in £ thousand million)	53.2	64.5	77.1	86.0	99.5
Capital consumption (in £ million)	1,791	2,133	2,593	2,954	3,538

35.1 years previously). The average total accounting life figure (at 17.8 years) is now 61 percent of the economic life (previously, 51 percent).

The generalizations made in the original article, however, concerning the rough equality of capital consumption figures and reported depreciation expenses, caused by accounting lives being only approximately one-half economic lives, are probably still true. This is because the procedure used to compute total accounting lives from the *Business Monitor MA3* data[9] by dividing gross tangible fixed asset values by depreciation expenses, over-states accounting lives. As noted in the original article, the asset values include freehold land, some of which had been revalued, and significant proportions of companies did not at that time depreciate freehold buildings and leasehold property.

To assess primarily the length of accounting lives in Australia, the accounts of a sample of twenty large listed Australian companies were examined. The accounts were for 1976/77, which is the latest year covered in the original article.[10] The accounting life figure is discussed below. Of the twenty companies, nine disclosed the cost or valuation of their freehold land. Excluding that asset from the numerator had the effect of reducing the accounting life figure by over 17 percent. If the proportionate effect of excluding freehold land would be the same in the United Kingdom, the implied total accounting life for 1976/77 would be 14.3 years (instead of 17.3, as previously reported), which is 51 percent of the revised economic life (of 28.1 years).

EVIDENCE FROM THE UNITED STATES

After the original article was published, Most conducted a survey of asset lives.[11] He claimed that his results showed that there was not a serious underestimation of asset lives in the United States. In fact, his results reveal a situation similar to that in the United Kingdom.

Most's survey was considered not to be well designed. There are two types of numbers for the total life of an asset. One is the asset's actual life, a figure that is known for certain only when the asset's useful life has ended. The other is the estimate of its life made at the approximate time that the asset is first acquired.[12] It is unlikely that Most would have received any information as to the first type of number unless he had specifically

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[9] Department of Industry, Business Monitor MA3: Company Finance, 10th issue (London: HMSO, 1979).

[10] The original article argued (p. 211) that that year was probably the latest for which the analysis reported could have been performed. Because the first exposure draft for the present standard (SSAP No. 16) was published toward the end of 1976, later years may have been affected by the CCA proposals.

[11] K.S. Most, "Depreciation Expense and the Effect of Inflation," *Journal of Accounting Research* (Autumn 1984), 782–88.

[12] Estimates of remaining life can be revised later, but accountants are likely to be reluctant to do so because of the consistency concept.

asked for it. His question[13] asked for *expected useful life.* His survey may have been based on the assumption of two types of expected future life (in some corporations, at least). One type is a "genuine" estimate (perhaps that used in making the investment decision to acquire the asset), and the other is a different, lower, figure used for accounting purposes. No evidence suggests that those different types of estimate exist, and it is totally implausible to suggest that they should. Their existence would imply not just biased estimating but also deliberate misrepresentation. Even if they did exist, Most's survey would not have discovered information as to the "genuine" estimates because his question concerned depreciation. His responses would, therefore, have related to accounting life. The implied total accounting life indicated in his survey was 8.4 years.[14]

It is difficult to understand Most's economic data and identify their source. His Table 1, for example, reports ages of fixed assets; however, it is total *lives* that are of interest. The problem is not shortage of data on economic lives. Data on capital stocks and capital consumption are published regularly, the most convenient source being the *Survey of Current Business* (hereafter abbreviated *SCB*). The problem is doubt as to the reliability of the life estimates underlying the economic data. Until recently the lives used were 85 percent of the Bulletin F tax lives, dating from 1942. The lives have recently been reviewed and increased, as described in the *SCB* for July 1985,[15] although the effect of the revision has not been substantial. The earliest year at present for which revised gross capital stock and capital consumption data at current cost are available is 1983. Dividing capital stock (*SCB*, August 1986, tables 5 and 9, p. 38) by capital consumption (*SCB*, July 1986, table 8.3, p. 85) gives an implied total life for nonfinancial corporations of 19.5 years in 1983. The data previously published for 1983,[16] based on the old life estimates, gave an implied total life of 17.7 years.[17] The results of Most's questionnaire related (presumably) to 1983. His accounting life of 8.4 years is less than half the economic life. Both Most's accounting life figure and the *SCB* economic life figure are, it is

[13] Most, "Depreciation Expense," 785.

[14] This is the reciprocal of his 0.119 straight-line depreciation rate (p. 786). Most notes, although not explicitly, that it is not possible to compare average lives computed by different methods. If life figures and balance sheet values for different types of fixed asset are available, an average life would normally be computed using as weights the balance sheet values. Dividing total balance sheet value by annual depreciation expense gives an average that is weighted by the depreciation expense for each type of asset (this is referred to in the original article and in this paper as *implied* total life). The former method will give a higher life figure than the latter. With Most's data, the approaches give lives of 12.8 years and 8.4 years, respectively .

[15] Department of Commerce, *Survey of Current Business* (Washington, D.C.: U.S. Government Printing Office, July 1985), 36–60.

[16] Ibid., 54–59.

[17] The change in life estimates was, therefore, equivalent to moving from 85 percent of the Bulletin F tax lives to 94 percent of them.

true, suspiciously low. Provided, however, that the relationship between them is approximately correct, the situation in the United States is very similar to that in the United Kingdom.

Most's results are questionable even by reference to data he cites. The totals of columns 2 and 3 in his Table 3,[18] summarizing historic cost data for a sample of published accounts, show an implied total accounting life of 14.2 years. The seven companies whose fixed asset data for 1983 are summarized in the thirty-eighth edition of the AICPA publication *Accounting Trends and Techniques*[19] indicate an implied total accounting life of 14.6 years. It must be remembered that published asset figures include freehold land, whereas Most's survey data do not, but that factor can explain only a small part of the difference from his figure of 8.4 years.

The *SCB* economic life figure of nineteen to twenty years for U.S. nonfinancial corporations in 1983 is low relative to the *Blue Book* figure for U.K. industrial and commercial companies of twenty-eight to twenty-nine years.[20] A difference as large as that is very surprising. It cannot be due to more ownership (rather than renting) of land in the United Kingdom because both sets of data exclude land. The original article quoted a survey, described in Griffin,[21] showing that the service lives of some fixed assets were only about 6 percent less in the United States than in the United Kingdom. The survey concerned only machine tools, but it covered ten industries. Which country's economic data are likely to be more reliable? On the basis of existing information, it is likely to be the U.K. set. In both countries the data were derived using the perpetual inventory method, based initially on tax lives, but, as noted in the original article,[22] at an important stage in the development of the U.K. estimates, an independent check was provided through a survey of fire insurance values.

The underestimation of fixed asset lives in the United States is unlikely to be due to an attempt to make an implicit allowance for inflation. That possibility could explain no part of the understatement in the United Kingdom, and the inflation rate in the United States during the most recent

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[18] Most, "Depreciation Expense," 787.

[19] American Institute of Certified Public Accountants, *Accounting Trends and Techniques*, 38th ed. (New York: AICPA, 1984), 140–45.

[20] The rather complex procedure involved in computing gross capital stock figures for 1983 was not undertaken. The total life figure for 1972 to 1976 is, as stated above, 29.2 years. The figure for 1983 would be virtually the same. The evidence for this is that, for the larger population of all U.K. enterprises in manufacturing, construction, and distribution, the total life figures for those two periods are virtually identical (1983 *Blue Book*, 70 and 74 and 1984 *Blue Book*, 84 and 88).

[21] T.J. Griffin, "The Stock of Fixed Assets in the United Kingdom: How to Make Best Use of the Statistics," *Economic Trends* (October 1976), 130–43.

[22] Skinner, "Fixed Asset Lives," 211.

five years covered in the original article was less than half that in the United Kingdom.

Evidence exists that in the United States, unlike the United Kingdom, accounting lives are significantly affected by tax lives. It is improbable, however, that more than part of the difference can be due to this factor. The American survey referred to in the original article[23] indicated that 40 percent of U.S. companies use different lives for taxation and financial accounting and that they rank tax lives second, behind each firm's own experience, among the five guides they use in estimating accounting lives. Tax lives are, presumably, considered (rightly or wrongly) to be reasonably realistic: 68 percent of companies are prepared to use different depreciation *methods* for each type of accounting. Although conformity with tax regulations is the most important factor in choosing accelerated depreciation, it is not important in choosing straight-line depreciation, but 79 percent of companies use that method. (The two proportions last quoted are even higher for large companies.) In the Australian survey reported later, tax lives were a reasonably important factor in choosing accounting lives, but the respondents who were contacted said that they considered the tax lives to be reasonably realistic. The survey was designed primarily to explore conservatism and to discover whether there are any other important factors.

CONSERVATISM

The original article ruled out inflation as a factor and assessed taxation matters as accounting for, at most, under one-third of the discrepancy between economic and accounting lives, but it left the matter there without suggesting any other factor that might account for the bulk of the discrepancy. One other factor is a major possibility, namely, the accounting principle (or concept) of conservatism (or prudence). Conservatism is one of the most strongly entrenched accounting principles. Sterling argued that it is the fundamental principle of valuation in traditional accounting, and that it is the premise from which the historic cost and realization rules are derived.[24] In a survey among the nineteen members of the Accounting Standards Committee,[25] conservatism ranked as the least important criterion in making decisions on accounting standards, but that was an expression of opinion of the importance that the concept ought to have in the future, not of the importance it has had, and does have, among practicing accountants.

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[23] C.W Lamden, D.L. Gerboth and T.W. McCrae, *Accounting for Depreciable Assets*, Accounting Research Monograph No. 1 (New York: AICPA, 1975), 17–27, 121.

[24] R.R. Sterling, "Conservatism: The Fundamental Principle of Valuation in Traditional Accounting, *Abacus* (December 1967), 109.

[25] E. Stamp, "First Step towards a British Conceptual Framework," *Accountancy* (March 1982), 123–30.

Conservatism represents the accountant's reaction to uncertainty. Assuming that, as in network analysis, uncertainty is typically handled by formulating pessimistic, optimistic, and most likely forecasts, one form of conservatism is the adoption of the pessimistic forecasts. As a consequence, losses are anticipated, but gains are recognized only when realized. In deciding when realization occurs, a reasonable degree of certainty is required. Conservatism, therefore, involves a pessimistic tendency to underestimate future benefits and to overestimate future costs. Another form of conservatism is that the forecasts themselves are biased. Suppose that a pessimistic estimate is one that, for a particular decision maker, there is a 1-in-6 chance of the outcome being as bad as, or worse than, that predicted. The decision maker could regularly select values for which there is in fact only a 1-in-10 likelihood of the outcomes being that bad. Evidence is presented below that both forms of conservatism exist. (The explanation of conservatism given here is a little more elaborate than, but entirely consistent with, those to be found in Hendriksen and in *SSAP No. 2.*)[26]

The importance of conservatism among the generally accepted accounting principles is in itself evidence that it is likely to be a factor in the underestimation of fixed asset lives. Evidence of that type must, however, be classed as indirect and, therefore, weak; other evidence is reviewed below. Conservatism could conceivably account for all the underestimation of asset lives if the uncertainty relating to the prediction of their lives is great enough, namely, if optimistic estimates usually prove to be, on average, their actual lives, and the pessimistic estimates are usually, on average, half the optimistic figures. The range of uncertainty could be as great as that, given the need to consider obsolescence in predicting economic life. Evidence from the survey that the range of uncertainty probably is that great is presented below.

This paper primarily concerns two questions arising from the original article. One is whether there are any factors in addition to conservatism, tax lives, and inflation that can account for the understatement. The second is whether there is any evidence implicating conservatism as a causal factor. Because the original article discussed two of those factors, this paper mainly concerns conservatism.

NONACCOUNTING EVIDENCE

The best evidence relating to conservatism includes, probably, some nonaccounting examples. In none of these cases could either inflation or taxation lives have had an influence. These cases also raise the possibility that con-

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[26] E.S. Hendriksen, *Accounting Theory*, 4th ed. (Homewood, Ill.: Irwin, 1982). 81–83; and Statement of Standard Accounting Practice No. 2, *Disclosure of Accounting Policies*, para. 14 (d).

servatism is not confined to accountants but is a basic human characteristic. Kendall and Stuart note the persistent tendency of crop estimators, revealed by the official agricultural statistics, to underestimate U.K. potato yields.[27] The precision of the estimators' forecasting shows no tendency to improve from year to year as a result of experience. Kendall and Stuart state that the statistics "exhibit very clearly an effect which has shown itself in nearly all the English crop reports (and appears also in other countries), namely, the chronic pessimism of crop forecasts."[28] In a remarkably similar statement, relating to forecasts of the demand for motor vehicles in the United States, Ascher says:

> The bias to underestimate has been consistent over time and for all forecast sources. . . . Throughout the period from 1950 to 1970 the same slightly pessimistic bias was maintained. Forecasters apparently did not "learn" from the feedback of real statistics showing that previous forecasts had indeed been pessimistic.[29]

The phenomenon also exists with very broad aggregates. Zarnowitz, talking of forecasts of gross national product, comments:

> Forecasters often regard themselves as "conservative" or "cautious." If this means cautious in appraising growth prospects, the results of our analysis bear cut this view. . . . Forecasters frequently underrated the increases in GNP, while displaying no such tendency in regard to decreases.[30]

A very well-known nonaccounting example is the experiment that Cyert and March performed using MBA students.[31] All of the subjects were given the same set of figures, and each subject was asked to use the data to derive a single estimate. One group of subjects was told that the figures were cost data and was asked to produce cost estimates; the other group was told that the figures were sales revenue data and was asked to produce sales estimates. The experiment was repeated ten weeks later with the same subjects but with the groups reversed. The estimates derived by subjects who thought they were handling cost data were significantly higher than the estimates (based on the same figures) produced by those who believed they were handling sales revenue data. A very recent example of conservatism in predicting revenue is reported by Ashton. This field study found an "executives' systematic underprediction bias" in the consensus forecasts of advertising revenue by the executives of a magazine.[32] The managers' predictions

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27 M.G. Kendall and A. Stuart, *The Advanced Theory of Statistics*, vol. 1, 3rd ed. (London: Griffin, 1969).

28 Ibid., 210.

29 W. Ascher, *Forecasting: An Appraisal for Policy-Makers and Planners* (Baltimore: Johns Hopkins University Press, 1978), 160.

30 V. Zarnowitz, "An Appraisal of Short-Term Economic Forecasts," National Bureau of Economic Research, Occasional Paper No.104 (NBER, 1967), 45 and 48.

31 R.M. Cyert and J.G. March, *A Behavioural Theory of the Firm* (Englewood Cliffs, N. J.: Prentice-Hall, 1963).

32 A.A Ashton, "A Field Test of Implications of Laboratory Studies of Decision Making," *Accounting Review* (July 1984), 367.

were low relative not only to actual revenue but also to the predictions generated by a regression model based on data used by the managers in making their forecasts. An interesting implication of the study is that if one adjusts managers' forecasts simply for pessimistic bias, the results may well be more accurate than forecasts derived from regression models.

ACCOUNTING EVIDENCE

An accounting example of conservatism is the study by McDonald designed primarily to examine the supposed objectivity of historic cost data. McDonald conducted a survey[33] among two groups of CPAs, involving depreciation on a hypothetical fleet of motor cars. The members of one group, the "net realizable value" group, were asked to estimate values for the fleet at the end of each of four years and were given ample information about used car prices. Those in the other group, the "present practice" group, were asked to choose a depreciation method, an economic life (in years or mileage) and a residual value for the fleet. Except in the first year, the cumulative depreciation charges were significantly higher for the present practice group than for the net realizable value group—on average, over the whole four years, they were approximately 23 percent higher, and approximately 30 percent higher for the majority of the respondents who chose straight-line depreciation. If entry prices rather than exit prices had been used in the investigation, those differences would undoubtedly have been even greater. Inflation cannot explain even part of the differences: the wholesale prices of motor vehicles in the United States decreased fractionally during the five years preceding the study. Tax lives could account for no more than part of the difference. The guideline tax life for motor vehicles was three years (see McCarthy[34]): the response numbers quoted by McDonald[35] indicate that slightly more than half the present practice respondents chose an accounting life of four years or more, and, in their cases, depreciation even for the fourth year was higher than in the net realizable value group.

Two empirical studies appear at first to contradict the evidence of McDonald as to the relationship of accounting book values and market values. In the survey reported by Sterling and Radosevich and by Sterling,[36] relating to a hypothetical used printing calculator, the mean of the book val-

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[33] D.L. McDonald, "A Test Application of the Feasibility of Market Based Measures in Accounting," *Journal of Accounting Research* (Spring 1968), 38–49.

[34] C.F. McCarthy, *The Federal Income Tax: Its Sources and Applications, 1978* (Englewood Cliffs, N.J.: Prentice-Hall, 1977), para. 9.70–9.77.

[35] McDonald, "A Test Application," 44.

[36] R.R. Sterling and R. Radosevich, "A Valuation Experiment," *Journal of Accounting Research* (Spring 1969), pp. 90–95; and R.R. Sterling, "A Test of the Uniformity Hypothesis," *Abacus* (September 1969), 37–47.

ues was a little higher (by approximately 3 percent) than the mean of the market values.[37] It is doubtful, however, that much reliance can be placed on this study so far as market values are concerned. The respondents were merely asked to "take a guess at the fair market value," and they were supplied with no definition of, or information about, market value. The term *market value*, when undefined, is (the author believes) usually taken to mean exit price; if so, that would help to explain why the market values were lower than the book values.

A study by Parker, also relating to a particular brand and model of printing calculator, compared their actual book values in firms that owned such machines with cash offer prices from used-equipment dealers for a specific six-year-old machine. The mean book value was substantially higher than the mean market value.[38] Those figures, however, cannot be taken at their face value. In computing the mean book value, Parker omitted several cases in which the calculators had been expensed fully in the year of purchase. Had they been included, the mean book value would have been $100. The market values used in the study were exit prices. What would they have been had they been entry prices? One would expect a machine, not involving installation and dismantling costs, with one-quarter of its life still remaining, to cost approximately one-quarter of its cost new. Taking one-quarter of the mean original cost quoted[39] gives an estimated entry price of $120 (that is, 20 percent *more* than the recalculated book value).

The surveys by Sterling and Radosevich, and Parker[40] are, therefore, consistent with the thesis propounded in this paper without providing direct support for the conservatism hypothesis. Two other types of evidence are in the same category.

JUDGMENTS ABOUT PROBABILITIES

One of those types of information is the substantial body of empirical evidence obtained by means of psychological experiments relating to judgments of probabilities. A phenomenon called *conservatism* has been found in most of those studies. The finding is that prior probabilities are not revised by subjects to as great an extent as subsequent evidence, together with Bayes' theorem, indicate that they ought to be revised. The phe-

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[37] Sterling and Radosevich, "A Valuation Experiment," 92.

[38] J.E. Parker, "Testing Comparability and Objectivity of Exit Value Accounting, *Accounting Review* (July 1975), p. 519.

[39] Ibid., 521.

[40] Sterling and Radosevich, "A Valuation Experiment"; and Parker, "Testing Comparability and Objectivity of Exit Value Accounting."

nomenon is described in a simple manner in Hogarth.[41] The early experiments are discussed in Edwards and the later experiments in Libby and in Ashton.[42] The evidence is (the author believes) consistent with the underestimation of fixed asset lives, in that the experience (presumably common) of assets being fully depreciated while they are still in use appears to have insufficient effect on judgments about the lives of new fixed assets. The effects of that experience appear to be even weaker than the results of the psychological experiments would lead one to expect, but that is perhaps understandable because long-lived assets are no doubt seldom replaced by identical items; in such circumstances, it is easy to rationalize the ignoring of past experience.

THE SURVEY

To gather same additional empirical evidence, a questionnaire survey was conducted among chartered accountants employed in industrial and commercial companies in Melbourne. Respondents who were willing to amplify their answers were asked to state their names and telephone numbers, and most of those who did so were contacted. Needless to say, the words *conservatism* and *prudence* were not used in the questionnaire or the covering letter. Further details, including the questionnaire and a summary of the responses, appear in the Appendix.

Australian accountants probably use lives that are not materially different from those used in the United Kingdom. There exists, unfortunately, no summary of Australian financial data. To obtain some guidance, the author selected a sample of twenty large listed companies and examined their accounts for 1976/77, the latest year covered in the original article. The total accounting life implied by the data was 19.7 years, compared with 17.9 for the listed companies in the U.K. sample for that year. No statistical test can be meaningfully applied to the difference, but the author believes the discrepancy does not indicate a significant difference between the two countries.

The first question in the survey gave optimistic, most likely, and pessimistic life estimates for a hypothetical piece of new capital equipment, and the respondents were asked to select an accounting life. The most likely figure, seventeen years, was a little less than the average accounting life

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[41] R.M Hogarth, *Judgement and Choice: The Psychology of Decision* (New York: Wiley, 1980), chap 3.

[42] W. Edwards, "Conservatism in Human Information Processing" in B. Kleinmutz, ed., *Formal Representation of Human Judgment* (New York: Wiley, 1968), pp. 17-52 ; R. Libby, *Accounting and Human Information Processing: Theory and Applications* (Englewood Cliffs, N.J.: Prentice-Hall, 1981), chap. 3 and Appendix B; and R.H. Ashton, *Human Information Processing in Accounting* (Sarasota, Fla.: American Accounting Association,1982), chaps. 5 and 8.

reported in the original article. The other two estimates were roughly equidistant in years from the most likely figure. No respondent chose the optimistic estimate. Approximately one-half the respondents chose the most likely figure, and the other half chose something less than that (usually, the pessimistic figure). The average life, 14.6 years, was approximately half way between the most likely and pessimistic estimates.

The third question asked the respondents to give the optimistic, most likely, and pessimistic estimates in years that were typical of their organizations. If an answer as specific as that was not possible for them, they were asked to state the proportions that optimistic and pessimistic estimates typically were of the most likely. If answers in years were given, the optimistic figures were on average approximately two and one-half times the pessimistic. If proportions only were supplied, the optimistic figures were on average approximately twice the pessimistic. The two types of answer were checked for consistency. Using the t-test, differences between them were not significant, there being a greater than 1-in-8 probability of the difference being due to chance.

When answers in years were given to the third question, the figures were remarkably low. The optimistic figure was only sixteen years, and, considering the answers to the first question, the average accounting life that would have been chosen (half way between most likely and pessimistic) was approximately eight years. This is considerably less than the accounting life figures reported in the original article. This discrepancy was probably partly due to the fact that the questionnaire asked for "typical," rather than average, life estimates. That was done in an attempt to maximize the number of responses to a question anticipated to be very difficult to answer. As a result, probably few of the respondents considered the lives of buildings and fixed plant, the answers probably being dominated by assets where decisions about lives are comparatively frequent. In addition, the low life figures probably reflect an increasing importance being given to obsolescence over the last decade.

Nearly half the respondents did not answer the third question. All those who did not and who identified themselves were telephoned. In a few cases, the reasons for no response was the difficulty in generalizing as to the various types of equipment used, or insufficient past experience, but in most cases the reason was that the accountants just did not think of ranges of uncertainty. They were concerned only to derive a single life estimate, either most likely or pessimistic, as they thought appropriate.

The answers to Question 1 indicate that conservatism in the form of the use of lives lower than those considered most likely does exist. Answers to Question 3 strongly suggest that the other form of conservatism, namely,

bias in deriving the life estimates, also exists, and is possibly more important than the former type.

Question 2 concerned those factors the accountants considered in assessing asset lives. Five factors were listed, and the question invited the insertion of others. Respondents were asked to rank the factors they considered relevant. More information would have been obtained from each response by asking for assessment of each factor on, say, a five-point scale, but that would (the author believes) have reduced the number of responses. By far the most important factor, not surprisingly, was experience in each respondent's own organization. A factor not previously recognized in the literature as being significant was shown to be quite important. Life estimates supplied by manufacturers of the equipment were ranked first or second by 24 percent of the respondents, and as being of some importance by 71 percent of them. The attempt to make an implicit adjustment for inflation was indicated to be of very little importance.

Tax lives, however, were stated to be quite important. Where this factor was marked first, second, or third by respondents who identified themselves, telephone conversations were held in all cases. The reason for adopting tax lives was the convenience of being able to use the same records for both taxation and accounting purposes. The accountants said, however, that they considered the tax lives to be reasonably realistic. Because realism can mean different things to different people, a check with the answers to Question 1 was performed to determine whether high importance being attached to tax lives was positively related to the desire to be more pessimistic than average in choosing accounting lives. The rankings given to tax lives in Question 2 were compared between those respondents to Question 1 who chose the most likely life and those who chose a lower figure (usually, the pessimistic life). No difference was observable between the two groups in the importance they attached to tax lives, and the chi-square test indicated there was a greater than 1-in-4 probability of the difference being due to chance.

The results of Question 2 provide additional evidence for the findings in the original article that the attempt to make an implicit allowance for inflation is of no importance in explaining the underestimation of asset lives, and that the influence of tax lives is probably of no importance. Question 2 was also designed to reveal whether any factors other than conservatism could account for the phenomenon. More than one-fourth of the respondents added one or another of three factors. Conservatism was written in by four respondents, but that does not represent a meaningful response to this question, and that reply has been ignored in the summary of responses. The opinions of consultants and valuers was specified, but only once, and then assigned a ranking of 3. The state and rate of change of tech-

nology were considered factors by nearly all of those who added to the question, and they were usually assigned a high rank. In one sense, technology is not a meaningful response. It has always been recognized that obsolescence is a major factor that must be assessed in predicting the economic life of an asset: the interesting question concerns the types of data used in making the assessment. On the other hand, the information used for that purpose was probably not fully covered by the items listed. Publications, such as newspapers, business literature, and technical journals, should have been added to the list of items. Obsolescence itself cannot account for the underestimation of asset lives, although an unduly pessimistic attitude to it can.

POSSIBLE SOLUTIONS

The results of the survey constitute good evidence that conservatism is the only factor that can account for the underestimation of fixed asset lives. That being so, what can be done? One partial solution is to abandon conservatism and replace point-estimate financial reports by probability-range statements. This possibility has been discussed for many years, and it has been empirically investigated. The evidence is not extensive, but it suggests that, in the case of U.S. commercial bank loan officers at least, their decisions would not be affected adversely by a change to confidence-interval financial statements (see Keys and the references he cites[43]). Despite the (on-the-whole) favorable evidence, neither users of financial statements nor practising accountants have called for such a change. Serious interest in the proposal appears to be confined to academic accountants. It would be only a partial solution at best because it would not solve the problem of bias in estimating the probability ranges.

In accounting, objective evidence has traditionally played an important part in the achievement of reasonable certainty. One type of evidence that has long been respected (for example, in stock valuation) is the judgement of experts. In the author's opinion, professional valuers should have the task not only of valuing fixed assets but also of determining the realism of annual depreciation charges. Valuers, it is true, are not likely to be immune from conservatism, but they are likely to be far less subject to it than accountants, partly because of their specialized training, and partly because of their known predilection for the use of market-based values wherever possible. The usual criticism of appraisals is that they are expensive. A number of valuers (for example, Briggs[44]) have, however, expressed the view that, although initial valuation would be expensive, subsequent reval-

[43] D.E. Keys, "Confidence Interval Financial Statements: An Empirical Investigation," *Journal of Accounting Research* (Autumn 1978), 389–99.
[44] J. Briggs, "The Valuation of Land and Buildings in Current Value Accounting, *The Australian Accountant* (December 1975), 672–75.

uations would be far cheaper. This is really no more than a matter of common sense: it would obviously require far less time and effort to update the value of fixed assets with which a valuer is familiar than to value the assets initially. The original article noted the dangers of relying on price indices.[45]

The issue, however, is not that of cost allocation versus appraisal. It is difficult to object to cost allocation, provided the cost being allocated is reproduction cost (that is, the replacement cost of an asset's remaining service potential) and provided the allocation is based on realistic life estimates. The advantages of using market values to derive entry prices is that they are based on lives and costs that are independent of the judgements of accountants. The available evidence is that accountants, apparently, cannot be trusted to use realistic life estimates.

Recent editions of the *Survey of U.K. Published Accounts* have shown that revaluations in general, and appraisals by professional valuers in particular, are becoming more common in the United Kingdom (at least among large companies), but those processes still have a long way to go. According to the 1982-83 *Survey*,[46] approximately 49 percent of land and buildings had been revalued, but only approximately 4 percent of other fixed assets.[47] As regards methods of valuation, only 25 percent of the companies had property values that were indubitably based on current professional valuations.[48] There is no evidence that independent valuers ever appraise depreciation charges. As stated in the original article,[49] the usefulness of the limited amount of revaluation that has occurred is reduced if realistic entry prices for fixed assets are divided by unrealistic estimates of their remaining lives.

CONCLUSION

Conservatism is the main factor explaining the underestimation of fixed asset lives. Conservative bias takes two forms: bias in estimating future life, and, where the estimate comprises a range of values, choice of a life toward the lower end of the range. Discovering the reason (or reasons) for the bias remains a subject for further investigation. Such investigation could be very difficult. A possible explanation is that accountants typically expect the rate

[45] Skinner, "Fixed Asset Lives," 221–22.

[46] Skerratt and Tonkin, *Financial Reporting 1982-83*, 87 and 92.

[47] Of the 280 companies for which data for 1981/82 were available, 79 percent had revalued approximately 62 percent of their land and buildings (0.79 X 0.62 = 0.49), and 20 percent had revalued approximately 19 percent of their other fixed assets (0.20 X 0.19 = 0.04). The 1983-84 *Survey* does not give as much detail about revaluation.

[48] In addition to that 25 percent (70 of the 275 companies that supplied adequate data for 1981/82), there was an additional 21 percent (57 companies) that had made substantial property revaluations, but of unspecified types, in the previous year.

[49] Skinner, "Fixed Asset Lives," 221.

of technological change to be much faster than in fact it is. It is very unlikely that such a reason would be discovered by means of a questionnaire.

APPENDIX

The questionnaire was sent to 320 members of the Institute of Chartered Accountants in Australia. The sample comprised all those who the 1984/85 list of members showed to be employed by industrial and commercial companies in the Melbourne metropolitan area. As with the U.K. accounting sample, companies whose main activities are in agriculture, mining, shipping, insurance, banking, and finance were excluded. Of the questionnaires mailed, 47 were returned unanswered, mainly because the accountants had left the companies, and in other cases where the accountants had no responsibility for the depreciation of fixed assets. The maximum possible number of responses was, therefore, 273. The number of replies received was 84, giving a response rate of 31 percent. The questionnaire and a summary of the responses follow.

The cover letter read:

The brief questionnaire enclosed is being distributed to a relatively small sample of accountants who work for industrial or commercial organizations in the Melbourne metropolitan area. It would be very helpful to my research if you could complete and return it. If you are unable to supply the information requested, I would appreciate it if you could nevertheless return the questionnaire with a note on it saying what the difficulty is. An addressed adhesive label for the reply is enclosed.

Questionnaire—The Accounting Lives of Fixed Assets

This short questionnaire is directed toward accountants who have the responsibility of deciding, or giving advice on, the accounting lives of fixed assets for the purpose of computing depreciation on them. The objects of this study are to discover how accountants deal with uncertainty relating to economic lives, and to find out what information is used in assessing such lives. Please return the completed questionnaire to:

_____

_____

Anonymity is guaranteed. It would, however, be very helpful if I could discuss your answers with you over the telephone. If you are willing to do so, please supply the necessary details at the end. I promise that any identifying information supplied will not be communicated to any third person.

Question 1

Imagine that a major piece of new capital equipment has been acquired and installed, and you have to choose, or advise on the choice of, its accounting life. You judge that, taking all factors, including obsolescence, into account, its economic life is likely to be in the following range:

Optimistic estimate	(1 in 6 chance)	23 years
Most likely estimate	(2 in 3 chance)	17 years
Pessimistic estimate	(1 in 6 chance)	12 years

Assume the use of straight-line depreciation. Ignore taxation factors: assume that you are prepared to account differently for financial reporting and taxation purposes. Assume also that any adjustments to take account of inflation will be made explicitly: in other words, that it is not necessary to choose an artificially short life in order to make an implicit allowance for the effects of inflation on depreciation charges.

Given the forecasts specified above, what accounting life would you favor?

.............years

Years	17.2	17	15	14.5	12	10	Mean life	14.6 years
n	1	39	4	1	35	2	No answer	2
							N	84

Question 2

In making estimates of the type set out in Question 1 and in choosing accounting lives, what factors typically do you take into account? Please delete the boxes relating to items of no importance to you, and rank the remaining items (1, 2, and so on) in their order of importance to you.

Rank	1	2	3	4	5	6	0		Responses
Experience in your own organization									
n	42	23	5	4	1	0	7	☐	82
Industry-wide data on past lives									
n	9	18	17	8	4	2	24	☐	82
Life estimates supplied by the manufacturers of the equipment									
n	3	17	24	10	4	0	24	☐	82
Lives specified for taxation purposes									
n	15	9	10	13	4	2	29	☐	82
Life short enough to compensate for failure to make adjustments for inflation									
n	2	4	6	6	7	1	56	☐	82
Other factors (please specify):									

———————————————————

———————————————————

Technology (state and rate of change)									
n	11	5	2	2	2	0	—	☐	22
Consultants' and valuers' opinions									
n	0	0	1	0	0	0	—	☐	1
							No answer		2
							N		84

Question 3

In making forecasts of the type set out in question 1, what range of uncertainty do you typically have to deal with? If there is a most likely life estimate that is typical of the capital equipment used in your organization, please answer part A below. If, because of the different types of equipment used, there is no one most likely estimate that is typical of your organization, please answer part B below: state there the approximate proportions which optimistic and pessimistic estimates would usually be of most likely estimates.

	A	Typical estimates		Mean	n
				(Years)	
		Optimistic	...................years	15.9	26
		Most likely	...................years	9.3	36
		Pessimistic	...................years	6.3	<u>26</u>
				Responses	<u>37</u>
or	B	Proportions	Mean	n	

Optimistic estimate: percentage of most likely estimate

	Mean	n
	136.5%	10

Pessimistic estimate: percentage of most likely estimate

	Mean	n	
	69.7%	<u>10</u>..................... %
	Responses	<u>10</u>..................... %

Unable to answer this question (please state the reason)

No answer	37
N	84

Note: If you are willing to discuss your answers to the above questions, please state your name and telephone number.

International Financial Statement Translation: The Problem of Real and Monetary Disturbances

H. PETER GRAY and PAUL J. MIRANTI*

The purpose of this paper is to distinguish two causes of changes in exchange rates and to offer a formula for foreign currency translation of certain balance sheet items that allows for this distinction. It will be argued that the proposed formula will provide an accurate means of financial statement translation with little increase in the computational costs. The two different causes of changes in exchange rates over time are (1) price-level disturbances that comprise different rates of inflation in different countries and (2) real disturbances that recognize changes in the fundamental conditions affecting economic relations between the two nations concerned. An example of a real disturbance would be a substantial change in the demand for the traditional export of one of the two countries. In the complex modern world, many such disturbances can occur at any time, but many are small and others offset one another in part or in whole. The analysis concerns only the net disturbance that changes the purchasing power of a unit of one country's currency in the second country. The paper does not address the question of how improved accuracy in translation may influence investor perceptions.

The first section of the article analyzes the two distinct causes of change in exchange rates over time and the implications of each kind of disturbance for the value in the home currency of a real (nonfinancial) asset owned by a foreign subsidiary. The second section provides the formula for computing the appropriate value of the subsidiary's assets in home-country currency when either or both kinds of disturbances have taken place between the time of acquisition of the asset and the time of

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consolidation. The formula has the advantage that it can be applied consistently to a number of subsidiaries with widely different exchange rate experiences and would be used even when nominal exchange rates are fixed by government policy because frequently such policy suppresses the effects of real disturbances. The final section compares the outcomes from applying the proposed method with those resulting from the procedures promulgated in Statements of Financial Accounting Standards (SFAS) No. 8 and No. 52.

CAUSES OF CHANGES IN EXCHANGE RATES

Traditional approaches to the question of foreign exchange asset valuation in balance sheet consolidation have focused on the choice between the use of the appropriate historical or current exchange rates. The definition of which rate should be used has been defined only in terms of the kind of asset whose value was in need of translation. Exhibit 1 has been reproduced from a well-known text on international accounting and shows that, traditionally, all differences in the use of historical or current rates can be ascribed to a single cause (the kind of asset)—except for the treatment of inventory under the temporal method, but that turns out to depend merely on the ways in which inventory is valued in the subsidiary's functional currency. Because rates of exchange between two currencies can change over time for two quite different reasons and with different implications for translation, none of the straightforward approaches given in Exhibit 1 can be relied upon to be appropriate. The analysis of this paper concerns only the translation of the value of real assets carried on the subsidiaries' books at depreciated original cost in local currency. All financial assets and liabilities should be valued at the current rate of exchange because the repurchase of the liabilities by the parent corporation would have to be conducted on the basis of the current rate of exchange. By distinguishing between financial and nonfinancial assets and liabilities, the argument of this paper will resemble the monetary-nonmonetary approach except that that there is no assurance that nonfinancial assets will be translated at the historical rate.[1] For simplicity of exposition, this paper will make no further distinction between "fixed assets" and "inventory."

Changes in the exchange rate between the currency of the home country of the parent multinational and the currency of the country in which the subsidiary is located can occur for two distinct reasons: (1) differential rates of inflation in the two countries whose currencies are being traded and (2) changes in the underlying conditions in world markets

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[1] Because assets will have been acquired by the subsidiary at different times, there will be a number of historical rates of exchange.

Exhibit 1. Exchange Rates Used to Translate Selected Assets and Liabilities

	Current-noncurrent	Monetary-nonmonetary	Current rate	Temporal
Cash, current receivables and payables	C	C	C	C
Inventory	C	H	C	C or H
Fixed assets	H	H	C	H
Long-term receivables and payables	H	C	C	C

Source: Jeffrey S. Arpan and Lee H. Radebaugh, *International Accounting and Multinational Enterprises* (New York: Wiley, 1981).
C = current exchange rate; H = historical exchange rate.

affecting the demand for and supply of internationally traded goods in each country. The first is a "price-level" disturbance and is the basis for the well-known purchasing-power-parity theorem (PPP) of exchange rate determination.[2] In its simplest terms, the PPP theorem states that a difference in the two rates of inflation will, under a system of flexible rates of exchange, be completely neutralized by changes in the exchange rate between the currencies of the two countries concerned. More formally, the real rate of exchange (the nominal or current rate adjusted for differences in the purchasing power of money in the two countries over a specified time) will be unchanged.[3] The second reason for a change in the rate of exchange is a "real" disturbance and occurs when conditions in international markets for goods and services have changed so that a unit of a currency will, after allowance for inflationary effects, buy more or fewer foreign goods.[4] Under these conditions, the real rate of exchange of the two currencies will have changed, and countries will find international trade more or less "profitable." In this respect, the real rate resembles the economist's concept of the net barter terms of trade.[5]

[2] Lawrence H. Officer, "The Purchasing-Power-Parity Theorem of Exchange Rates: A Review Article," *International Monetary Fund Staff Papers* (March 1976), 1–60.

[3] The relationship between real and nominal exchange rates is developed in the second section. Suffice it to note that in recent years the real effective exchange rate of the U.S. dollar has experienced substantial variability. During the six and one-half–year period (October 1978 through March 1985), the index of the real effective exchange rate of the U.S. dollar (1980–82 =100) rose from 84.6 to 129.7—an increase of 53 percent. During the two and one-half–year period (March 1985 to November 1987), this index fell by 33 percent to 87.0. See Morgan Guaranty Trust Company, *World Financial Markets* (New York, various dates).

[4] Different investment flows can also cause real disturbances under a system of flexible rates of exchange.

[5] Jacob H. Viner, *Studies in the Theory of International Trade* (New York: Harper, 1937), 555-58.

The distinction between the two kinds of disturbances and its effects for translation can be most easily seen in terms of the acquisition of a piece of land in Germany by a U.S. corporation. Let the land cost DM 100,000 in July 1970, when the exchange rate was DM 4.00 = $1.00 ($0.25 per mark). In December 1985, the correct value of that asset in the consolidated balance sheet, when the exchange rate is DM 2.00 per dollar, will vary according to the kind of disturbance that caused the appreciation of the mark. If the price levels in both countries have remained completely constant over the fifteen-year period, the appreciation of the mark will have been caused by a real disturbance such as a change in world trading conditions in favor of Germany. The land should be valued at the current rate or $50,000: the original cost of the land in marks divided by the current rate of exchange. The corporation has made an unrealized capital gain of $25,000. On the other hand, should the weakening of the dollar be due to inflation in the United States at a greater rate than in Germany, the appreciation of the mark is "spurious" in the sense that a mark buys no more American goods. The land is carried on the books at DM 100,000 and should be valued at the historical rate ($25,000). What this provides is the same value that would have been entered in the consolidated balance sheet had the land been purchased in the United States and entered at original dollar cost.[6]

The essential point of this section is that accurate translation of values in 1985 depends not only on the kind of asset but also on the *cause* of any change in exchange rates over the period between acquisition and consolidation. Because multinational corporations will have assets in many different countries with different real/nominal rate histories, a translation procedure based simply on the character of the asset cannot provide a reliable valuation of nonfinancial assets held abroad.

The example can also be given in terms of a productive asset with the exchange rates quoted in direct terms of so many units of a foreign currency per dollar. A multinational acquires a going-concern plant in Germany on January 1, 1981, when the nominal rate was 3.00, for $20 million. The nominal rate at the end of 1985 was 2 marks per dollar. The factory has been depreciated by 50 percent of its value and is carried on the subsidiary's books at DM 30 million. If the cause of the appreciation of the mark is real, the factory should be translated at the current rate and its worth set at $15 million. The analysis is straightforward: the foreign production unit yields a presumed unchanged future flow of mark-denominated profits, but these marks have increased in value in terms of the parent's currency. It is assumed that the functional currency of the subsidiary

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[6] The procedure effectively adjusts foreign values to the rate of inflation experienced by the home country.

is the mark and the effect on profits that will follow from the appreciation of the mark will be reflected in the income statement.[7] When the cause of the depreciation of the dollar is inflation in the United States of 50 percent over the four years with constant prices in Germany, the plant is valued according to the historical rate ($10 million). The return on the plant will be constant in marks, and these will buy more dollars, but the valuation of the plant by the historical rate allows the foreign plant to receive the same treatment as would have been accorded a local investment in the United States under similar circumstances.[8]

The distinction between the effects of the two kinds of disturbance is important if the translation entries are to be accurate: no single procedure can be used for all subsidiaries when some host countries are experiencing predominantly real disturbances and other hosts are experiencing predominantly price-level disturbances. In practice, exchange rates are likely to vary for a combination of reasons, both price-level and real disturbances, and the change in the nominal and real exchange rates will vary across countries. The task of developing a general formula for translation is deferred to the next section, but it must rely on the rules developed here; when the nominal rate has changed and the real rate has not changed, the historical rate is the appropriate translation rate; when the real rate has changed with no price-level disturbances (with the result that the change in the nominal rate equals that in the real rate), the correct procedure is to use the current rate.

A PRACTICAL FORMULA

Multinational corporations have a number of subsidiaries located in many countries with very different economic features. It is assumed that all subsidiaries will use the local currency as their functional currency. Bilateral exchange rates between the individual functional currencies and the home-country currency will evolve according to the mix and severity of the price-level and real disturbances experienced by pairs of countries involved.[9]

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[7] In practice, most businesses, which use the local currency as the functional currency, will be oriented primarily toward the home market and will obtain their inputs from that market. Minor changes in the economic value of an asset resulting from changes in international competitiveness will make themselves seen in the income statement.

[8] The computation is, of course, much more complex in the short run when profit rates can vary substantially as a result of inflation. See F. Modigliani and R.A. Cohn, "Inflation, Rational Valuation and the Market," *Financial Analysts Journal* (March-April 1979), 24–44. Changes in tax laws, tariff rates, and the repercussions of changes in real rates can all affect the profitability of a subsidiary and, therefore, of its value as an asset. These effects are too idiosyncratic to be included in a general rule for translation.

[9] The SFAS No. 52 special case of host countries whose economic environments are "highly inflationary" acknowledges the distinction in a simple way but neglects any concommitant changes. See Financial Accounting Standards Board, *Accounting Standards Current Text* (Stamford, Conn.: FASB, 1986), F60.116–17.

A change in the spot rate of exchange over time can be allocated to real and price-level disturbances by the formula in equation (1). The values are expressed in index number form with the rates at the time of acquisition used as the base. The inflation factors, then, show increases in the price level between the base year (of acquisition of the real asset) and the time of consolidation. Only if that period is one year does the price-level index indicate an annual rate of inflation.

$$R = N\,(PL_H/PL_F) \tag{1}$$

where

R is the real or inflation-adjusted rate,

N is the nominal rate, and

PL_H and PL_F are the price-level indices for the home and foreign country, respectively.

If R is set to equal 110 and N to 140, the 40 percent increase in the nominal (current) rate is attributable to greater inflation abroad than at home in the amount of 75 percent and real disturbances (favorable to the home country) of 25 percent. (Here exchange rates are expressed in indirect terms of so many units of foreign currency per unit of home currency.[10])The ratio (PL_H/PL_F) will have a value of 78.6 percent (115/146).[11]

Consider a subsidiary with an asset currently valued in local currency at 300,000 pesos. It was acquired five years ago when the rate of exchange was 2 units of local currency per unit of home currency (the dollar); the current rate is 2.5 units. A 25 percent weakening of the subsidiary's currency is attributable to a combination of real and price-level disturbances: the real disturbance accounts for 62.5 percent of the change in the currency's value and price-level disturbance for 37.5 percent.[12] Then the valuation of the asset in the parent's balance sheet should be computed by valuing 62.5 percent of the asset's value at the current rate (recognizing the adverse real disturbance against the peso) and 37.5 percent at the historical rate (recognizing that this portion of the weakening of the peso will be offset by higher peso earnings). The value of the asset is $75,000 (187,500/2.5) plus $56,250 (112,500/2.0) for a total translation value of $131,250.

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[10] This formula needs amending if exchange rates are expressed in direct terms of so many cents per unit of foreign currency.

[11] The procedure proposed in the preceding section would also be valid for a system of fixed rates (e.g., adjustable peg system of Bretton Woods).

[12] Computing the percentage effect of the elements of a product requires recourse to logarithms. Consider the following equation: 148 = (125.4) (1.18), where 148 is the index of N, 125.4 is the index of R, and 1.18 is the ratio of the two inflation indices: 57.7 percent of the change in N is attributable to the real disturbance. This is computed by the ratio of the log 1.254 to the log of 1.48.

This formula can be applied across all nonfinancial assets and all countries. It has obvious advantages in terms of accuracy of the consolidation process in comparison with relying wholly on either the current or the historical rate. Two operational questions should be considered; the solution to both is judgmental rather than precise.

The first question is how the change in the value of the asset in the balance sheet should be reflected in the income statement. Real disturbances are not always permanent. The standard example of a reversible real disturbance is a crop failure in a food-importing country. Presumably, the harvest will be "normal" in the following year and the real exchange rate will return to its approximate original value. Not all real disturbances are reversible within a short time period. The increase in the real rate of exchange of the dollar following the inflow of foreign exchange attracted by high U.S. interest rates between 1982 and 1985 is an obvious example of a real disturbance of medium duration. Some real disturbances are permanent. Because of the possibility that a real disturbance might reverse itself, one might reasonably argue that its effects be gradually phased into the income statement over several years.

The second problem is the measure of inflation to be used. Although the main concern is likely to be property, plant, and equipment, the measure that contains this kind of equipment, the gross national product deflator, would seem to preferable. The number can be calculated from official data if it is not available directly.[13]

Because the relationship on which the proposed formula is based is an identity, it is theoretically necessary for accountants to have access only to the real (bilateral) and the nominal rates. The necessary data bank would best be compiled over a long period for all major pairs of currencies by some central, authoritative body such as the Financial Accounting Standards Board, and major accounting organizations would pay a fee for the right to tap into it.

THE ANALYSIS AND PROPOSAL IN TERMS OF RECENT ACCOUNTING PRACTICE

Since the advent of freely floating exchange rates in 1973, the FASB has promulgated several statements of financial accounting standards providing guidance for the measurement of the financial condition of international business enterprises. The most important were SFAS No.8 (1976) and SFAS No. 52 (1981), which defined procedures for translating foreign subsidiary statements denominated in local functional currencies into a

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[13] This datum may present availability difficulties, and the consumer price index may prove operationally preferable.

parent's reporting currency. Neither of these standards, however, assessed the influence that the distinction between price-level and real adjustments in exchange rates have on the net present values of foreign investments. This is particularly apparent when considering the results achieved through the application of these standards in measuring the value of longer term, nonfinancial assets.

In this section the results achieved in recording property, plant, and equipment in the consolidated balance sheet of an international enterprise will be analyzed using three different accounting methods: SFAS No. 8; SFAS No. 52; and the proposed method. In each instance this analysis will consider, from the perspective of a hypothetical U.S. multinational, the accounting effects of a $1 million plant investment in a foreign nation with an estimated useful life of ten years one year after the initial date of acquisition. The exchange rate changes evaluated were drawn from actual data. These illustrations focus on three distinct epochs during which the exchange rate of the U.S. dollar and that of particular foreign currencies were driven by differing combinations of real and inflationary factors. They will compare and contrast the differing effects of moderate inflation (Italy: January 1, 1976–December 31, 1976); a major real adjustment (Japan: July 1, 1985–June 30, 1986); and hyperinflation (Mexico: January 1, 1986–December 31, 1986).

Case 1. Moderate Inflation: Italy, 1976

The Italian experience in 1976 illustrated the effects on foreign balance sheet translation of exchange rate changes that were fueled both by moderate inflation and by changes in real factors influencing that nation's international competitiveness. During 1976 the Italian economy, reflecting a greater dependency on imports of petroleum in comparison with the United States, experienced higher domestic inflation as well as a real deterioration in its competitiveness. Inflation in Italy during this period amounted to 18.1 percent while that in the United States was only a moderate 5.2 percent. The nominal dollar-lire rate, however, adjusted by an amount greater than the differences in price levels is suggested.

$$R = 1.2801 \ [(1.0522)/(1.181)] = 1.1405 \tag{2}$$

The application of the proposed method formula provided a value of $813,850 for the Italian plant. (See Exhibit 2.) Under the proposed

Exhibit 2. Translated Italian Plant Valuation under SFAS No. 8 and No. 52 and Proposed Method (In $U.S.) at December 31, 1976

SFAS No. 8	SFAS No. 52	Proposed method
900,000	703,086	813,850

method 56 percent of the total exchange rate change was attributed to inflation differentials and, therefore, translated at the historic rate. The remaining 44 percent was attributed to real effects and, thus, was translated using the current rate. (See Equation 2.). Because neither SFAS No. 8 nor 52 allocated the translation adjustment using both current and historic rates in this manner, it provided substantially different valuations of these assets.

Property, plant, and equipment under SFAS No. 8. Under SFAS No. 8 no effect was given to the real disturbance in translating property, plant, and equipment. Instead, the entire change was translated as though it resulted from differences in international inflation. SFAS No. 8 utilized the "temporal" approach for translating foreign subsidiary financial statements.[14] Under this method all current items as well as long-term monetary items were translated at current rates. Longer term nonmonetary items such as property, plant, and equipment were translated at historic rates.

The translated value of the plant under SFAS No. 8 amounted to $900,000 at the end of 1976 (see Exhibit 2). This, of course, would be the same amount recorded if this asset had originally been accounted for in U.S. dollars and depreciated on a straight-line basis. Although the dollar income stream generated by this investment had declined as a result of the real disturbance, no effect was given to this in the translated value of the subsidiary's fixed assets. This accounting convention, thus, masked a real economic change and exaggerated the true dollar value of the subsidiary's plant.

Despite its apparent conceptual simplicity, SFAS No. 8 was a source of controversy among accountants. The criticism of SFAS No. 8 that led ultimately to its displacement, however, did not focus on its failure to measure the differing effects of real and inflationary exchange rates.[15] Rather, some objected to the earnings variability that resulted from giving effect in operating statements to those items translated at current rates. Others

[14] Jeffrey S.Arpan and Lee H. Radebaugh, *International Accounting and Multinational Enterprises* (New York: Wiley, 1981), 103–13; and Frederick D. S.Choi and Gerhard G. Mueller, *International Accounting* (Englewood Cliffs, N.J.: Prentice-Hall, 1984), 129–33.

[15] Kerry Cooper, Donald R. Fraser, and R. Malcolm Richards, "The Impact of SFAS No. 8 on Financial Management Practices, "*Financial Analysts Journal* (June 1978), 26–31; Roland E. Dukes, *An Empirical Investigation of the Effects of Statement of Financial Accounting Standards No. 8 on Security Return Behaviour* (Stamford, Conn.: FASB, 1978); Rita M. Rodriguez, "FASB No. 8: What Has It Done For Us?" *Financial Analysts Journal* (March-April, 1977), 40–77; Rita M. Rodriguez and E. Eugene Carter, *International Financial Management* (Englewood Cliffs, N.J.: Prentice-Hall, 1984), 304–08; Paul Rosenfield, "Accounting for Foreign Operations," *Journal of Accountancy* (August 1987), 102–12; John K. Shank, "FASB Statement 8 Resolved Foreign Currency Accounting—Or Did It?" *Financial Analysts Journal* (July-August 1976), 55–61; and John K. Shank and Gary S. Shamis, "Reporting Foreign Currency Adjustments: A Disclosure Perspective," *Journal of Accountancy* (April 1979), 59–66.

believed that these operating statement adjustments confused investors concerning enterprise cash flows available for dividend payments. Some companies responded by committing scarce resources to the formation of risk management groups to counter the potentially adverse consequences resulting from translating foreign-currency–denominated statements.

Property, plant, and equipment under SFAS No. 52. In developing a new standard for foreign currency translation during the early 1980s, the FASB seemed more concerned with correcting the earnings variability and calculational complexities caused by SFAS No. 8 than with the development of measures that provided insights into the changing international values of foreign investments. The new standard, SFAS No. 52, required all accounts, except owner's equity, to be translated at current rates. Equity accounts were translated at historic rates. Unlike SFAS No. 8, translation gains or losses were no longer reported in the enterprises's operating statement; instead, the resultant "translation adjustment" was posted directly to a special valuation provision in the consolidated entity's equity accounts. The only exception was for companies operating in hyperinflationary economies (defined as 100 percent inflation over a three-year period).[16] Only in this special case were the specific requirements of SFAS No. 8 still applicable.[17]

The translated value of property, plant, and equipment in the Italian subsidiary example under SFAS No. 52 was calculated to be $703,086 (see Exhibit 2). This translation adjustment, however, would have been appropriate only if the exchange rate change resulted exclusively from real disturbances. More than half of the exchange rate change resulted from differences in the U.S.–Italian price levels and, therefore, should have been translated using historic rates. Consequently, no provision was made for that portion of the exchange rate change that merely reflected inflation differentials. This practice ultimately led to an understatement of the dollar value of foreign subsidiary's fixed assets.

Case 2. Japan: July 1, 1985–June 30, 1986

The second case involving U.S. and Japanese currencies was an example of an exchange rate change that resulted primarily from the effects of real disturbances.[18] In this instance the U.S. dollar depreciated against the yen

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[16] The economic definition of hyperinflation makes this definition seem faint-hearted. Cagan's classic study defined hyperinflation in terms of price increases of at least 50 percent per month for six consecutive months. See Phillip Cagan, "The Monetary Dynamics of Hyperinflation," in *Studies in the Quantity Theory of Money*, ed. Milton Friedman (Chicago: University of Chicago Press, 1956), 25–117.

[17] Financial Accounting Standards Board, *Accounting Standards Current Text*, F60.101-153.

[18] These disturbances were mainly deliberate policy actions because the authorities tried to reduce the current overvaluation of the dollar.

by 34 percent during the period July 1, 1985 to June 30, 1986. Differences in price levels between these countries were, however, minimal. In Japan and the United States, inflation amounted to 2.3 and 2.8 percent, respectively. As a consequence, virtually the entire adjustment (99 percent) was attributed to real disturbance (see Equation 3).

$$R = (.66278) [(1.02830)/(1.0231)] = .66615 \tag{3}$$

Only in this special case does SFAS No. 52 provide a close approximation of the valuation derivable under the proposed formula (see Exhibit 3). The plant's value under SFAS No. 52 amounts to $1,357,939 as compared to the $1,344,360 under the proposed formula. The total difference between these methods amounts to a negligible 1 percent.

The result achieved applying SFAS No. 8, on the other hand, was inappropriate considering the economic events that gave rise to this particular exchange rate adjustment. The SFAS No. 6 valuation of $900,000 failed to consider that the yen income streams generated by the plant have increased in real dollar terms (see Exhibit 3). The purchasing power gain of the yen in dollars was greater than the increase explainable by differences in these countries' domestic inflation rates.

Case 3. Mexico:January 1, 1986–December 31, 1986

Current accounting standards for the translation of foreign-based fixed assets seem to reflect exchange rate changes that are driven primarily by price-level disturbances. SFAS No. 52 requires the use of the historic rate in translating this asset class in the special case in which the local economy where the subsidiary is operating experiences more than 100 percent price inflation over the course of three consecutive years. For this type of "hyperinflationary" situation, current standards in effect revert to the previous requirements of SFAS No. 8.

This practice, however, is predicated on the questionable assumption that the existence of foreign hyperinflation is sufficient evidence to support the conclusion that exchange rate changes are responding exclusively to price-level adjustments. Such a formulaic approach, which does not consider the relative effects of real and price-level disturbances, may often give rise to misleading accounting measurement.

Exhibit 3. Translated Mexican Plant Valuation under SFAS No. 8, No. 52, and Proposed Method (in $U.S.) at December 31, 1986

SFAS No. 8	SFAS No. 52	Proposed method
900,000	900,000	798,405

During calendar year 1986 the Mexican peso devalued by an amount greatly in excess of that suggested by that nation's higher inflation rate. During 1986 inflation in Mexico exceeded that in the United States by approximately 200 percent; during that same period, however, the peso depreciated against the U.S. dollar by some 250 percent. Applying the proposed method, 19 percent of this total exchange rate adjustment was attributable to factors other than differences in price levels (see Equation 4). In the case of Mexico, this "excess" adjustment will have resulted from a deterioration in its real terms of trade due to falling prices for export commodities, particularly petroleum.

$$R = (2.4845) \, [(.96274)/(.49596)] = 1.18630 \tag{4}$$

The failure of current standards to recognize that overseas hyperinflation may be associated also with real disturbances, as well as price-level disturbances, would have given rise to a material distortion in the valuation of our hypothetical multinational's Mexican plant (see Exhibit 4). In this case the plant would have been valued at $900,000 under either SFAS No. 8 or 52 in consolidation. Our analysis indicates, however, that these balances would have overstated the dollar value of this asset by about 11 percent. A more accurate valuation would have been $798,405.

It is important to recognize that this Mexican example is not unique with respect to the operation of real factors in situations that superficially appear to be explainable solely by differences in price levels. Current financial accounting standards would have given rise to an even greater distortion in value measurement had they been applied to the case of an Argentine subsidiary during calendar 1980.

CONCLUSION

Those who set accounting standards should consider modifying procedures for international financial statement translation to distinguish better exchange rate adjustments caused by real or inflationary disturbances. This is most relevant with regard to the measurement of longer-term, non-financial items. Historical exchange rates should be used in translating part of a total exchange adjustment resulting from differences in international inflation rates. Alternatively, current exchange rates should be used in cases in which real disturbances alter the international terms of trade. By proving more economically relevant data, the application of the translation methodology proposed in this paper promises to contribute to a more efficient worldwide allocation of scarce financial resources.

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Revaluation of Assets in Canada, 1920–36

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This study attempts to describe, analyze, and comment on the revaluations of fixed assets and intangibles that corporations undertook in Canada during the years 1920 to 1936.

Revaluation of assets was not uncommon in North America during this period. The extent of such activity has been fairly well described in the United States,[1] but no systematic recounting or commentary exists for Canada. Canadian revaluation practices would be expected to differ because the influences of American practices, legislation, and professional and corporate organizations were only just beginning to emerge in Canada during this period.

The time period selected is significant because it includes (not unlike the United States) a period of steady economic growth in the 1920s, culminating in the spectacular stock market crash in 1929. A severe country-wide depression followed, with recovery coming slowly through the mid-1930s. Not until 1934 and 1935 did federal legislation improvements require revaluation disclosure in corporate annual financial statements. The economy abruptly changed in 1939 with the entry of Canada in World War II. Anecdotal commentary persists that the 1920s were years of frequent upward revaluations, that the recession years of the 1930s entailed frequent downward revaluations, and that these revisions were being used to alter profits or to provide a source for dividend distribution. The study therefore attempts to describe the Canadian revaluation experience—distinguishing the type and size of assets

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[1] Solomon Fabricant, "Revaluation of Fixed Assets, 1925–1934," *National Bureau of Economic Research Bulletin 62* (7 December 1956); reprinted in *Asset Appreciation. Business Income and Price Level Accounting: 1918–1935,* ed. Stephen A. Zeff (New York: Arno Press), 1976, 1–11; Gadis J. Dillon, "Corporate Asset Revaluations: 1925–1934," *Accounting Historians Journal* (Spring 1979), 1–15; Shizuki Saito, "Asset Revaluation and Cost Basis: Capital Revaluation in Corporate Financial Reports," *Accounting Historians Journal* (Spring 1983), 1–23.

and the number of companies involved, the frequency and years of occurrence, and the accounting treatment used in the financial statements. Consideration is also given to the corporate circumstance under which the revaluations occurred and to the reasons advanced by management for undertaking such actions. Where possible, comparisons are made with the American experience.

SCOPE OF INQUIRY

The study is limited to the revaluation of fixed assets and intangibles for those companies—largely commercial, industrial, and mining—incorporated under the general provisions of the (federal) Dominion Companies Act and the counterpart provincial legislation. The provisions of the path-breaking Ontario Companies Act of 1907[2] and the Dominion Companies Act of 1917 had simply required that "land, buildings, plant, goodwill, franchises, patents, copyrights, trademarks, leases, contracts and licenses" were to be distinguished and that "amounts written off on account of depreciation of plant, machinery, goodwill and similar items" be disclosed.[3] It was only in the Dominion Companies Act of 1934 that the disclosure of "land, buildings and plant, stating the basis of valuation, whether cost or otherwise and, if valued on the basis of an appraisal, the date of appraisal and the name of the appraiser" was required.[4] The income statement requirements of the 1934 Act were similar to those of the 1917 legislation. All three statutes related to disclosure requirements and did not prescribe either the circumstances in which revaluations were either appropriate or what accounting treatment should be used.

The evidence for the revaluations is gathered from the financial statements in *The Annual Financial Review–Canadian*, an annual anthology of voluntarily disclosed corporate annual reports.[5] The anthology contains 87 percent of the commercial, industrial, and mining stocks traded on the Montreal and Toronto Stock Exchanges.[6] To assure a good cross-section of successful and unsuccessful firms, of firms that commenced operations both prior and subsequent to 1920, and of firms that existed for the full period 1920 to 1936, three sets of firms were chosen from the anthology. The first set consisted of all firms (45) included in 1920 but not in 1936; the second set consisted of all firms (66) included for all years 1920 to 1936; the third set consisted of a randomly chosen sample (60 of 188) of firms included in 1936 but not 1920. In total, 57 percent (171 of 299) of the firms listed in the anthology that fell within one of these three sets were examined. The financial statements of all 171 firms for the years implied in the three sets were examined for the follow-

[2] George J. Murphy, "Financial Statement Disclosure and Corporate Law: The Canadian Experience," *International Journal of Accounting* (Spring 1980), 2.

[3] Ontario, Statutes, *The Ontario Companies Act*, 1907, 7 Edward VII, Ch. 34, Sec. 36.

[4] Canada, Statutes, *The Companies Act. 1934*, 24 and 25 George V. Ch. 33.

[5] *The Annual Financial Review —Canadian* (Toronto: Houston's Standard Publications) 1921–37.

[6] Calculation made using the stock market record of the *Financial Post* during the last week of trading in 1925 (January 1, 1926), 6, 9.

ing: (1) the type of asset revalued; (2) the amount, direction, and accounting treatment of the revaluation; (3) the financial status of the firm including, where warranted, the depreciation and dividend policies; and (4) the directors' or presidents' reports where these were available.

THE LITERATURE

The seventy revaluation-related articles appearing in *The Canadian Chartered Accountant, The Accounting Review,* and *The Journal of Accountancy* during the period 1920–36 were reviewed, together with the most popular Canadian textbook of the period by Smails and Walker (1926). The literature displays a great variety of theoretical commentary on practices. In light of such variety, generalizations are difficult to make; however, the following themes are suggestive of the Canadian literature: historical cost valuation with depreciation reflecting the allocation of costs over the useful service life was generally recommended; revaluations were countenanced when differences between book values and appraisal values were markedly different; the propriety of revaluations was particularly confirmed by a complete concurrent financial reorganization; the theoretical nature of intangibles, especially goodwill, seemed so equivocal that circumstances warranting both their retention at full cost values, or for writing them down to nominal amounts, were both encountered; declines in value owing to obsolescence were viewed more properly as charges against earned surplus than declines owing to changes in market values; except for obsolescence and goodwill, the accounting treatments recommended attempted to prevent the revaluation from having an effect on earnings until the write-up or write-down was realized through a sale or disposal; appreciation from write-ups should not be credited to accounts that were available for dividend distribution; reasons for revaluations centered on a concern for obsolescence, for the permanent contraction of operations, for more realistic depreciation charges, for the maintenance of real capital, and, most importantly, simply to reflect current values.

A review of *The Financial Post* for the period revealed little interest in revaluations per se. A great deal of interest, however, was exhibited in improved financial statement disclosure including the valuation bases of assets, which would include, of course, valuations based on appraisals.[7] Specific concern was evinced for the uncertainty and variability relating to the goodwill accounts of Canadian corporations. In the United States, great concern was elicited in the literature and the financial press for presumed abuses in asset revaluations.[8] Indeed, it is said that such charges aided in confirming the historic cost principle.[9] Virtually no direct comparable evidence or concern was located in Canadian sources.

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[7] Murphy, "Financial Statement Disclosure," 91–92.

[8] Dillon, "Corporate Asset Revaluations," 1.

[9] Saito, "Asset Revaluation."

The empirical research literature relates mostly to the United States. In 1934 the Securities and Exchange Commission required all listed companies to disclose particular information on past asset revaluations since 1925. Fabricant's investigation[10] in 1936 of 208 randomly selected large industrial firms indicated that 75 percent of all firms revalued fixed assets, intangibles, or investments over the ten-year period. On average, write-ups amounted to 5.7 percent and write-downs to 14.8 percent of 1934 book values. Dillon's sampling[11] of 110 firms confirmed the high percentage of firms revaluing; however, he found that in the period 1925 to 1929 the average revaluation was 6.1 percent of the book value of the firm assets of the preceding year. Although a variety of accounts was used as offsets to the revaluations, virtually one-half of the counter-balancing credits or debits were to unspecified surplus accounts. His study did not touch on the reasons management offered for the revaluations or on the depreciation or dividend policies subsequent to the revaluation that might have explained managements' reasoning in undertaking the revaluations.

Saito[12] found that two accounting treatments existed for upward revaluations: the balancing appreciation credit was transferred to the capital account through a stock dividend or, more commonly, the appreciation credit was used either to aid the write-downs of other assets, usually goodwill, or to offset accumulated deficits. He also found that downward revaluations were usually charges against earned surplus when its balance was sufficient and, failing that, against a capital surplus that had been created previously by upward revaluations or by a voluntary reduction in capital stock.

The only Canadian revaluation data come from a small study by E. V.C. Smith[13] in 1935 in an undergraduate thesis on depreciation. He found that less than 1 percent of firms revalued their fixed assets downward from 1930 to 1934. Of twenty-one such firms, sixteen decreased their capital stock or capital surplus, four charged earned surplus, and one charged current earnings.

FINDINGS

Exhibit 1 data indicate the frequency of revaluations of fixed assets and intangibles. Over the seventeen-year period somewhat more than one-third (37.4 percent) of the 171 companies engaged in a revaluation.[14] This proportion is

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[10] Fabricant, "Revaluation of Fixed Assets ," 1–2.

[11] Dillon, "Corporate Asset Revaluations," 5.

[12] Saito, "Asset Revaluation," 6–10.

[13] E.V.C. Smith, "Depreciation Policies of Canadian Corporations during the Depression," Bachelor of Arts thesis (University of Western Ontario, 1935), 10, 32.

[14] The American and Canadian data are (in addition to the time period) not quite comparable because the former included revaluations of investments, but the latter did not. However, because revaluations of investments in America were not more frequent than those of fixed assets and intangibles, their exclusion, together with the longer time period examined in Canada, gives assurance that the American percentages are considerably higher.

Exhibit 1. Companies Revaluing Assets: 1920–36

Revaluation frequency	Number of companies	Percentage of 171 sample companies	Total number of revaluations
Once	35	20.5	35
Twice	15	8.8	30
Three times	6	3.5	18
Four times	4	2.3	16
More than four times	4	2.3	24
Totals	64	37.4	123

considerably less than the three-quarters that were found by Dillon and Fabricant to revalue in the United States over the shorter ten-year period. Clearly, departure from historical cost, though contemplated in the 1934 Canadian legislation, was comparatively infrequent. However, of the sixty-four revaluing companies, twenty-nine revalued more than once with four companies accounting for 24 of the 123 total revaluations.

According to data in Exhibit 2, a little more than one-third of the sixty-four companies revalued only fixed assets over the period, although somewhat fewer than one-third of the companies revalued only intangibles or both fixed assets and intangibles. Of those sample companies having intangibles (95), roughly 43 percent (22.1 + 21.1) revalued intangibles; little more than 25 percent (13.4 + 11.7) of all sample companies revalued their fixed assets.

Information in Exhibit 3 indicates that most of the fixed asset write-ups took place before 1930 as did most of the intangible write-downs (all intangible revaluations were write-downs). There was an equal number of fixed asset write-ups and write-downs in the 1920s. Although a steady number of firms wrote down fixed assets prior to 1930, most of the firms did so after 1930. On

Exhibit 2. Components of Asset Revaluations: 1920–36

Type of revaluation	Number of companies	Percentage of revaluing companies	Percentage of 171 sample companies	Percentage of 95 sample companies with intangibles
Fixed assets only	23	35.9	13.4	9.5*
Intangibles only	21	32.8	12.3	22.1
Both	20	31.3	11.7	21.1
Totals	64	100.0	37.4	52.7

*Nine of the twenty-three companies that revalued only fixed assets had intangibles that could have been written down.

Exhibit 3. Analysis of Revaluations by Direction: 1920–36

Year	Write-up of fixed assets	Write-down of fixed assets	Write-down of intangibles	Total revaluations*
1920	3	0	3	6
1921	1	1	3	5
1922	1	2	4	7
1923	2	2	4	8
1924	2	2	5	9
1925	2	0	6	8
1926	1	2	9	12
1927	2	3	7	12
1928	2	2	7	11
1929	0	2	5	7
Subtotals	16	16	53	85
1930	4	0	2	6
1931	0	4	3	7
1932	0	6	3	9
1933	0	3	1	4
1934	1	5	1	7
1935	1	1	4	6
1936	0	7	5	12
Subtotals	6	26	19	51
Totals	22	42	72	136 †

*There were no intangible write-ups.
†Exhibit 1 shows 13 fewer revaluations. These are represented by combinations of write-ups of fixed assets and either write-downs of intangibles or write-downs of fixed assets and intangibles for those companies that "revalued once."

the other hand, there were many more intangible write-downs in the 1920s than in the 1930s.

The size of the revaluations relative to the net fixed assets and intangibles of the preceding year over the three categories of fixed asset write-ups, fixed asset write-downs, and intangible write-downs is presented in Exhibit 4. In only 51 of 135 instances were revaluations of a size less than 10 percent. The larger revaluations generally came as a result of financial reorganizations. The comparable American evidence[15] indicates a much lower level of size significance, with an average revaluation for the 1925 to 1929 period being approximately 6 percent.

Exhibit 5 reflects the considerable variety of offsetting accounts for the revaluations over the three categories of fixed asset write-ups, fixed asset write-downs, and intangible write-downs. The data are categorized by the ten-year period 1920 to 1929 and the seven-year period 1930 to 1936.

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15 Dillon, "Corporate Asset Revaluations," 8.

Exhibit 4. Size of Revaluation Relative to Net Fixed Assets and Intangibles of Preceding Year: 1920-1936

Relative size in percentage	Fixed asset write-ups	Fixed asset write-downs	Intangible write-downs	Total
100 to 125	2	—	—	2
50 to 99	2	—	5	7
25 to 49	6	13	13	32
10 to 24	7	14	22	43
0 to 9	5	15	31	51
Totals	22	42	71	135*

*One fewer revaluation than in Exhibit 3 because of the inability to distinguish the values assigned to fixed assets and intangibles.

With regard to fixed asset write-ups, the preferred method from the literature would have been to credit a capital surplus or equivalent type account on the reasoning that such fortuitous appreciation represents a permanent capital commitment. However, this treatment occurred in only two instances. The literature concerns that appreciation be credited to earned surplus from which dividends could be disbursed was violated on five occasions. In these instances a review of dividend activity after the revaluation revealed that the resulting appreciation had not been distributed in this manner. In another five instances in the 1920s, the appreciation was offset against a write-down of the goodwill account. The literature suggested that goodwill write-offs should be against profits. The offset of fixed asset appreciation and goodwill may have been implicitly transacted through the earned surplus; if so, the offset implies that appreciation had been credited to a potential pool for dividend distribution. On six occasions, the appreciation was simply credited to the accumulated depreciation account resulting in no net change in fixed assets. Although many writers did not regard this treatment as reflecting a true revaluation, it was included in the study because the management report to shareholders treated it as such and because the revaluation was often confirmed by an independent appraisal. A financial reorganization, oftentimes with a new company taking over the assets at much higher independently appraised amounts, was the occasion for four of the largest revaluations revealed in the study.

The fixed asset write-downs of Exhibit 5 reflect the changing circumstances of the 1920s and 1930s. The write-downs in the 1920s were most commonly a charge to earned surplus. However, in the 1930s when some companies had suffered loss years, capital surplus was called on more frequently than earned surplus as a source of the write-down. In most instances, however, companies were forced to accommodate the write-down through a formal reorganization involving the reduction of capital stock. Unlike fixed asset write-ups, fixed asset write-downs were generally not evidenced by an external independent appraisal.

Exhibit 5. Accounting Treatment of Revaluations: 1920–36

Type of revaluation	Period	Goodwill	Fixed assets	Earned surplus	Reserve for depreciation	Other reserves	Capital surplus	Reorgani-zations	Unknown	Total
Fixed asset write ups	1920s	5*	—	3	4	—	1	3	1	17
	1930s	—	—	2	2	—	1	1	—	6
Subtotals		5	—	5	6	—	2	4	1	23
Fixed asset Write-downs	1920s	—	—	11	1	2	1	2	—	17
	1930s	—	—	4	4	—	7	14	—	29
Subtotals	—	—	—	15	5	2	8	16	—	46
Intangible Write-downs	1920s	—	5a	34	—	6	1	8	2	56
	1930s	—	—	2	—	2	1	14	—	19
Subtotals		—	5	36	—	9	2	22	2	75
Totals		5	5	56	11	10	12	42	3	144†

*Reflects write-off of goodwill against fixed asset appreciation.
†Total disagrees with Exhibits 1, 3, and 4 because some revaluations involved more than one accounting period.

Exhibit 5 excludes all systematic annual amortizations of intangibles. Because financial statements in many instances did not distinguish between goodwill and other intangibles, the table represents a combination of all intangible assets. The data therein reflect corporate concern for the ephemeral and uncertain nature and value of intangibles: in the 1920s accumulated profits allowed 60 percent (thirty-four of fifty-six) of the write-downs to be recorded through earned surplus, whereas in the 1930s with severely diminished operations, almost three-quarters (fourteen of nineteen) of the write-downs had to be accommodated through corporate restructuring. Burgeoning profits in the 1920s allowed management to rid the balance sheet of these soft assets, whereas low profits or significant losses in the 1930s made it difficult to justify the presence of intangible valuations at all. As Exhibit 2 data indicate, a much higher percentage of firms (43.2 percent of those having intangibles) wrote down intangibles than they did fixed assets (25.1 percent). In the 1920s a variety of reserve accounts, ranging from general reserve to appropriation for sinking fund bond redemptions, together with capital reorganizations—mostly in the latter part of the decade—were the other vehicles to record the intangible write-downs.

Exhibit 5 also permits comparison of the relative frequency of the Canadian and American write-ups and write-downs for both fixed assets and intangibles. Over the seventeen-year period there were twenty-three write-ups and forty-six write-downs of fixed assets in Canada for the 171 sample firms, whereas over the shorter ten-year period, 1925 to 1934, there were thirty-five and sixty-seven, respectively, in America for a smaller sample of 110 firms.[16] However, the average annual write-down of intangibles was much more comparable between the two countries (seventy-five and forty) for the periods indicated respectively for the Canadian and American experience. Contrary to the American experience, most of the write-downs arose during the 1920s.

REASONS FOR REVALUATIONS

In fifteen of the nineteen nonreorganizational write-ups of fixed assets (see Exhibit 5), the directors or presidents indicated in their annual reports that it was appropriate to adjust assets up to their current value level (three companies in the 1930s provided supplementary information on current values although such values were not formally incorporated in the records). Of all write-ups, 70 percent were evidenced by an independent appraisal. The annual reports did not go beyond indicating that the discrepancy between current values and net book values was the reason for recording the appreciation. The literature suggests that the need to maintain capital may have been the reason at the root of such appraisals. Were this so, it might be evidenced by increased depreciation charges in years subsequent to the revaluation; however, in only

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[16] Ibid., 6.

four of the twenty-three write-ups was there a systematic annual increase in the depreciation. Nor is it likely that there was any benefit to be obtained from the possibility of reducing taxable income by depreciating the appreciated amount.[17] From the evidence available therefore, it would seem that the reasons for the write-ups do not go beyond managements' suggestion that the discrepancies between book values and appraisal values warranted a change in records of the company.

Only nine companies cited the need to recognize lower current values as the explanation of fixed asset write-downs. This number as a proportion of total fixed asset write-downs was much smaller than for those that gave reasons for fixed asset write-ups. Similarly, where most write-ups had been supported by independent appraisals, only four write-downs were so evidenced. Virtually all of the write-downs involving reorganization were explained by management as a form of contraction of operations. Not unrelated to this type of explanation was the reasoning by eight other firms that obsolete, discontinued, or inactive assets were the cause of their write-downs. Once again, as with write-ups, there were relatively very few (four) instances of subsequent systematic annual reductions in depreciation.

No upward revaluations of intangibles took place in the 171 sample companies over the seventeen-year period. There is therefore—with the proviso that disclosure in financial statements and annual reports was much less complete than at present —no hint that any nonpurchased goodwill was being written up and regarded as assets.

As mentioned earlier, the study excludes all systematic annual amortizations of intangibles. In the seventeen-year period, a little more than one-half (75 of 144; see Exhibit 5) of all revaluations involved the irregular write-down of intangibles, with approximately three times as many revaluations (56 to 19) occurring in the 1920s as in the shorter 1930 period. Unlike the revaluation of fixed assets, management commentary on the reasons for the intangible revaluations was infrequent. In the earlier period, none of the revaluations (which were generally a charge to earned surplus) placed the company in a deficit position; however, in the latter period, most of the write-downs related to financial reorganizations that involved the diminution of capital stock. From the foregoing comments and from a certain "reading-between the-lines" of directors' and presidents' comments in annual reports, the inference is drawn that in the 1920s, the level of current and accumulated profits allowed management leeway in writing down assets whose values were difficult to support objectively and that in the 1930s, the adverse economic problems of corporations, which often required a complete financial restructuring, virtually forced management to write off these "soft" assets.

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[17] Smith, "Depreciation Policies," 119; and George J. Murphy, "The Influence of Taxation on Canadian Corporate Depreciating Practices," *Canadian Tax Journal* (May/June 1972), 233.

OTHER ASPECTS

The incidence of multiple revaluations was quite extensive. Almost 46 percent (twenty-nine of sixty-four) revalued more than once. Although there were several instances of multiple revaluations of fixed assets, most of the multiple revaluations involved intangibles and most took place in the 1920s. A high percentage (approximately 40 percent) of those companies that wrote up fixed assets wrote them down later—invariably in the 1930s.

Companies' operating results were examined to determine the possibility of a relationship with revaluations: in the 1920s rising or stable corporate profits were generally associated with the writing up of fixed assets and the writing down of both fixed assets and intangibles. In the 1930s, losses or falling profits were more frequently associated with write-downs. There were, however, contrary to the foregoing generalizations, several instances in the 1920s in which write-ups of fixed assets took place during loss or unstable-profit years, and in the 1930s write-downs of fixed assets and intangibles occurred not infrequently in years of stable or rising profits.

This study indicated that somewhat more than one-third of the sample companies engaged in revaluations whereas the much earlier Smith study indicated that only 1 percent did so. The difference in findings is attributed to several factors: Smith's study covered only the five years 1930 to 1934, but this study covered the seventeen-year period 1920 to 1937; he was concerned with only fixed asset write-downs and therefore ignored the other two types of revaluations; his population included many companies incorporated through statutes other than the Dominion Companies Act (e.g., utilities, financial institutions); he ignored write-downs that were charged to fixed asset reserve accounts (i.e., accumulated depreciation); and, finally, this study located nine revaluations in Smith's population that he had not found.

SUMMARY

The findings of the study significantly differed from those of the only previous Canadian investigation undertaken by E.V.C. Smith. Somewhat more than one-third of the sample companies were found to have revaluations of either fixed or intangible assets. This proportion is markedly lower than that of the American experience. What seemed to be of concern in the United States for "asset revaluation abuses"[18] seemed to have no counterpart in Canada's professional literature, financial press, or in so far as is discernible from annual reports, in actual corporate practices.

Contrary to anecdotal belief, as many write-downs of fixed assets occurred in the 1920s as write-ups, and almost three times as many write-downs of intangible assets occurred in the 1920s as in the 1930s. No evidence indicates that the fixed asset write-ups served to increase earnings or act as some reposi-

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[18] Dillon, "Corporate Asset Revaluations," 12.

tory from which dividends were declared. Depreciation on the appreciation arose in only a few instances. Although a high proportion of companies that wrote up fixed assets later revalued them downward, no evidence indicated that these were activities that reflected anything other than buoyant, and later depressed, market values of the times. Lower depreciation charges seldom ensued subsequent to fixed asset write-downs; because no official accounting standards requiring annual depreciation existed at that time, it is quite unlikely that the financial reorganizations involving asset revaluations were undertaken simply to show more profits (or less loss) owing simply to reduced depreciation.

Though fewer companies engaged in revaluation relative to the United States, the size of the American revaluations were, on average, considerably smaller. Almost two-thirds of the Canadian companies did not stray from the use of historical cost during the seventeen-year period. Retrospectively, and particularly with the current-value experiments of the 1970s and 1980s so recently in mind, this strong adherence to the historical cost principle seems remarkable, particularly in light of the American evidence of very frequent revaluations and the roller-coaster history of market prices during the 1920s and 1930s. It has been argued that the historic cost principle was largely adopted prior to the third and fourth decades of this century.[19] The evidence from this study tends to support that generalization, and it may well have been this earlier acceptance that accounts for the relative infrequency of revaluations in Canada. The only tenuous (but equivocal) explanation that can be offered for the average relative size of revaluations being larger in Canada than in the United States is that Canada probably suffered a more severe recession in the 1930s.[20]

The discomfort that Canadian literature has felt with the uncertainty of the future economic benefits that attach to intangibles was reflected in actual practices. Write-downs of intangibles outnumbered those of fixed assets in the proportion of seven to four. Similarly, relative to the number of firms that had intangibles on their balance sheets, the percentage of their revaluations was much higher. Moreover, most of these revaluations took place in the economically buoyant 1920s.

In summary, the evidence indicates that revaluations in Canada during this period were relatively infrequent; that almost one-half of those that did take place related to intangibles; that write-downs occurred in the 1920s as well as in the 1930s; that revaluations, when they did arise, were frequently significant in amount; and that the accounting treatment of revaluations did not lead to changes in earnings (even through depreciation charges) or to the bolstering of equity accounts from which dividends were distributed.

[19] George J. Murphy, "The Evolution of Corporate Reporting Practices in Canada," *Academy of Accounting Historians,* Working Paper Series, vol. 1 (1979), 334.
[20] Safarian, The Canadian Economy," 1.

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Accounting and History

CARL BREWER*

The purpose of this paper is to identify a close parallel that exists between accounting and history. The paper suggests that accounting net income is a historical pattern of interpretation and that accounting is, consequently, a history of the firm. Such viewpoint results in a clearer understanding of both accounting and the current state of the accounting environment.

The paper addresses "accounting as history" but is not concerned with "accounting history," per se, and does not, therefore, enter into the recent series of papers debating the legitimacy of accounting history as a field of study.[1]

HISTORY DEFINED AND THE CHANGING VIEW OF ACCOUNTING

Webster's New Collegiate Dictionary defines history as "a chronological record of significant events (as affecting a nation or institution) usu. including an explanation of their causes. . . . [A] branch of knowledge that records and explains past events. . . .[2]

That accounting meets this definition (at least in part) is obvious. Accounting records the significant events (i.e., transactions) affecting an institution (i.e., a business organization). That accounting provides an explanation may not be as apparent but nevertheless will be demonstrated herein.

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[1] V. Baladouni, "The Study of Accounting History," *International Journal of Accounting* (Spring 1977), 53-67; R.J. Lister, "Accounting as History," *International Journal of Accounting* (Spring 1983), 49–68; A.G. Hopwood and H.T. Johnson, "Accounting History's Claim to Legitimacy," *International Journal of Accounting* (Spring 1986), 37–46.

[2] *Webster's New Collegiate Dictionary* (Springfield, Mass.: G. & C. Merriam Company, 1981).

It is worthwhile to recall the definition of accounting formulated in 1941 by the Committee on Terminology of the (now) American Institute of Certified Public Accountants (AICPA):

Accounting is the art of recording, classifying, and summarizing in a significant manner and in terms of money, transactions and events which are, in part at least, of a financial character, and interpreting the results thereof.[3]

This definition is very similar to the definition of history (i.e., records and explains) versus recording and interpreting (accounting).

Although the association of accounting with art and history has now fallen into disuse, probably few would object to the statement that accounting was generally considered to be an art and, to some degree, a history of the firm as late as the 1950s and perhaps on into the 1960s.

Certainly by the 1970s a movement was active to seek a more expanded role for accounting as evidenced by the definition that superseded the above definition of the Committee on Terminology: "Accounting is a service activity. Its function is to provide quantitative information, primarily financial in nature, about economic entities that is intended to be useful in making economic decisions."[4]

In the wake of the search for such usefulness, the viewpoint of accounting as history and art fell by the wayside. But should such a viewpoint have been discarded?

ACCOUNTING

In a classic article Byrne described professional accounting (as it related to the examination of financial statements and reports thereon) as consisting of three phases:

(a) Accounting principles, and the rules derived from these principles,
(b) The practices and conventions relating to the presentation of accounts in financial statements,
(c) The technique of auditing.[5]

It is apparent that he intended accounting principles to be fundamental truths that relate to the preparing of the accounts. This conclusion is inferred from his quoting the definition of principles from *Webster's New International Dictionary*: "A fundamental truth; a comprehensive law or doctrine, from which others are derived, or on which others are founded; a general truth; an elementary proposition or fundamental assumption; a maxim; an axiom; a postulate"[6] and his statement that "In the development of any field, principles are discovered that represent the fundamental truths on which the field of knowledge rests."[7] It will be suggested

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[3] Committee on Terminology, American Institute of Certified Public Accountants (AICPA), *Accounting Terminology Bulletin No. 1, Review and Resume* (New York: AICPA, 1953, par. 9).
[4] Ibid.
[5] G.R. Byrne, "To What Extent Can the Practice of Accounting Be Reduced to Rules and Standards?" *Journal of Accountancy* (November 1937), 364–65.
[6] Ibid., 368.
[7] Ibid.

here that if fundamental truths regarding the preparation of accounts exist at all, these fundamental truths must be closely associated with exchange transactions of an entity.

Gilman noted that Byrne was almost alone among writers of his day in separating accounting and reporting. He states:

Is report preparation an activity separate and distinct from accounting? Byrne [1937, p. 375] takes the definite stand that two separate sets of principles are here involved and that the title "accounting principles" should not be applied to "the manner of preparation of the statements, the classification of the data shown thereon, and the various methods of disclosure of pertinent information." He thinks that the rules for presenting financial statements are not to be confused with the principles of accounting. His seems to be a lone voice. Others who have attempted to enumerate principles of accounting have made little distinction between accounting and reporting.[8]

Yet such a distinction is a useful one, and following Byrne's lead, financial reporting will be separated from the accounting process of preparing accounts. As used subsequently, *accounting* refers to the accounting process, a process that in its modern form is synonymous with double-entry accounting. This view perceives that double-entry accounting (via its adjusting and closing journal entries) is more than mere bookkeeping. This position is consistent with that of several other authors.[9] *Financial reporting* as used in this paper refers to the preparation of financial statements. (One is tempted to use Byrne's (b) above, but caution precludes this because present-day financial reporting consists of more than simply the "presentation of accounts in financial statements.")

The Subject Matter of Accounting

Although the majority of accounting researchers have probably discarded the view that accounting is a branch of history, perhaps there still exists a minority of researchers who cling to this position. Schrader and Malcom profess the belief that accounting is "history" and state:

This possible conception of accounting [as history] restores the actions of the firm as the subject matter, or referent, of accounting, but it does not require predictable outcome in the sense of Sterling's model-of-the-firm.[10]

Concerning the subject matter of accounting, Schrader and Malcom are clearly referring to exchange transactions of a firm for they cite an article by Schrader that states:

. . . because it is the writer's conviction that they are the essence of business activity, transactions will be treated as the relevant enterprise activity in . . . this . . .

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[8] S.A. Gilman, *Accounting Concepts of Profit* (New York:Ronald Press, 1939), 180-81.

[9] E.A. Spiller, *Financial Accounting* (Homewood, Ill.: Irwin, 1971), 3, 4, 97; A.C. Littleton, *Structure of Accounting Theory* (American Accounting Association, 1953), 36; Committee on Terminology, American Institute of Certified Public Accountants (AICPA), *Accounting Terminology Bulletin No. 1*, par. 4.

[10] W.J. Schrader and R.E. Malcom, "A Note on Accounting Theory Construction and Verification," Abacus (June 1973), pp. 97–98.

study. . . . [A] transaction will be defined as a de facto exchange of value between the entity under consideration and another party.[11]

The reference to Sterling was to counter Sterling's criticism that the outputs of "accounting" are not susceptible to individual verification. Sterling states:

The process of accounting may be cast in the form of the [following schema]: There are observable occurrences (transactions, exchanges) which are inputs (entries) to the formal system. These are manipulated (partitioned or classified and summed) according to certain rules. The outputs (the financial statements or the balance of any particular account) are verified (audited). . . .

The difficulty with this interpretation springs from the peculiar nature of the verification process in auditing. With minor exceptions, none of the outputs of an accounting system are separately verifiable. That is, there is no independent empirical operation which one can perform in order to verify the figures that were calculated from the inputs. Neither "net income" nor "total assets" are observable or separately measurable; instead they are summations of account balances. Account balances are not observable or separately measurable; instead they are summations of the entries. The auditing process is not a verification of the outputs; instead it is, in essence, a recalculation of the outputs and an "examination" of the underlying business documents in order to check on the accuracy or verity of the inputs. Thus, the auditing process focuses on the inputs to the system and the way in which those inputs are manipulated. It does not verify the outputs of the system.[12]

From Schrader and Malcom's viewpoint (i.e., accounting viewed as history) the outputs need not be separately verifiable; they are interpretations and as such should not be expected to be verifiable.

Schrader and Malcom's comment (i.e., that the actions of the firm—exchange transactions—are the subject matter of accounting) can be related to Sterling's viewpoint. Transactions (i.e., Sterling's inputs) are the facts with which accounting is concerned. Financial statements (i.e., Sterling's outputs) are interpretations of those facts. Schrader and Malcom continue:

If accounting be history, then interpretations may be expected to differ even when experts agree on the 'facts.' And finally, if accounting be history, its function is always to be rewriting its interpretation and its understanding of the firm.

Thus we believe the subject matter of accounting does not necessarily follow the empirical model. . . .[13]

Schrader has described this view in more detail:

Insofar as observation of this subject matter is concerned, accounting may be as "scientific" as any other discipline. The element of art may be reserved for

[11] W.J. Schrader, "An Inductive Approach to Accounting Theory," *The Accounting Review* (October 1962), 646.
[12] R.R. Sterling, "On Theory Construction and Verification," *The Accounting Review* (July 1970), 450–51.
[13] Schrader and Malcom, "A Note on Accounting Theory Construction and Verification," 98.

interpretation of the results (at which point, incidentally, fanciful and creative imagination distinguish the Einstein from the technician in the natural sciences also).[14]

Schrader and Malcom also urge that if accounting is a branch of history, ". . . accountants should explore the research methods of historians. Historians, even if they disclaim prediction, respect verification."[15]

HISTORY AND ACCOUNTING

Historians, Accounting, and Interpretation

Historians are concerned with facts (events) and interpretation (explanation). Webb stated:

[The historian's] function is to view society dispassionately if he can—and explain its past actions with as much reason and as little passion as possible. He is, as distinguished from the physicist, severely handicapped in his method. His handicap is that he must seek truth without benefit of laboratory. Since he has no laboratory, can in the nature of his material have none, has no possible way of demonstrating by experiment, the historian can never prove anything in the sense that the physicist can. The historian does collect evidence, usually in the form of records of what happened, but he can never prove that the records are infallible or that he has all the pertinent evidence. Furthermore, he can never divest himself of his own point of view. For these reasons the historian's conclusions are always tentative, never universally accepted, and are almost certain to be discarded partially or totally by his successors. This whole procedure must seem highly unsatisfactory—and unscientific, as indeed it is—but the historian has no choice but to use it. For him there is no other method.[16]

The classification of history as facts and interpretation is remarkably similar to the classification of "accounting" as accounting and financial reporting. The accounting process records significant economic facts of a business organization (i.e., transactions). Financial reporting presents an interpretation of those facts.

Schrader confirms this. Regarding reporting on periodic or divisional bases he states: ". . . These kinds of reporting are interpretive; they cannot be disengaged entirely from subjective elements ranging from "sound" judgment to artistic license."[17]

Income As Interpretation

One could state that interpretation is present in financial reporting as well as being directly embedded in the methodology of the orthodox accounting process itself, specifically in the adjusting and closing jour-

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[14] Schrader, "An Inductive Approach to Accounting Theory," 646.
[15] Schrader and Malcom, "A Note on Accounting Theory Construction and Verification," 98.
[16] W.P. Webb, *History as High Adventure*, ed. E.C. Barksdale (Austin, Texas: The Pemberton Press, 1969), 42–43.
[17] Schrader, "An Inductive Approach to Accounting Theory," 649.

nal entries, the procedures that determine periodic income and allocate it to owner equity. Accounting income, then, is an interpretation of the transactions recorded in the accounts. But why has such an interpretation evolved?

Historical Patterns and Accounting Income

In discussing historical research, Webb stated:

> What the historian does as he peers into the kaleidoscopic past is this: he tries to see relationships among the varied past activities of man. He searches for connections, appraises forces and treats them as causes operating to produce resultant effects. If the historian looks at the shifting scene long enough—never directly but through other men's records—he begins to see patterns forming; a sort of crystallization seems to occur as the lens of his mind takes focus. Though these may be lovely patterns, they are more intangible than the stuff physicists deal with. The patterns can never be touched or tested by the senses; they can only be described as they appear to the informed and questing mind. Since the historian must depend on the skill of his description, the clarity of his exposition, he must give more attention to the art of presentation than his scientific brother needs to give. If he is less of a scientist, he may be more of an artist.

> Once the patterns form, the historian begins to seek out the one pattern for special attention, usually the one that seems to him to dominate the age he is trying to understand. This pattern takes on importance for him; he is likely to think that he has discovered some force or influence that controlled some things, that seemed to touch and color everything in the society that it accompanies.[18]

If accounting is a form of history of a business enterprise, accounting (via accountants' interpretations of the facts of business enterprise, that is, transactions) would search out the one pattern that has dominated the age of business enterprise. The dominant force in the modern business era has been profit and the pursuit of profit. This is the motive that has given business its dynamic quality. Thus, income determination (i.e., profit) is an interpretation of the facts of business (i.e., transactions).

In his monumental work, *The Great Frontier*, Webb argues that the pursuit of profit is a relatively recent phenomenon. He states:

> . . . [T]o the modern man, profit seems so desirable, is so generally accepted as a motive of action, that he cannot without intellectual effort bring himself to believe that it was not always so. Yet the historians tell us that medieval society was not powered by this motive. Man does not strive long for the impossible, and the medieval man had such limited opportunity for profit as to cause him to seek other values primarily. He could see no sense in hunting a fortune where so few could find it, in figuring interest where there was so little to bear it and where opportunities were too few to justify the risk of assuming to pay it. The powerful dynamic of an expanded world had not yet issued its invitation to men to gamble with one another and with nature for prizes of unexampled magnitude.[19]

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[18] W.P. Webb, *History as High Adventure*, 43.
[19] W.P. Webb, *The Great Frontier* (Austin: University of Texas Press, 1964), 173-74.

[Though not addressed at length in this paper, *The Great Frontier*[20] (with its boom hypothesis of modern civilization[21] and its subhypothesis of the dual circulation of wealth)[22] looms as a compelling background against which to study the evolution of accounting, reporting, policy, and auditing.]

In summary, accounting, as a branch of history focusing on business activity, has sought the one interpretation that best explains the essence of business activity, and this interpretation is income (i.e., profit). From this one can conclude that accounting meets the definition of history. Accounting provides a record of significant events (i.e., transactions) and provides an explanation of those events by searching out one of the most meaningful patterns of the age (i.e., pursuit of profit) and associating it with those events (i.e., through income determination).

REPORTING AND POLICY

A few comments about reporting are appropriate. Coincidental to the rise of the profit motive and its subsequent embedding in the accounting mechanism of income determination has been the evolution of a structure for reporting results of business activity, a phenomenon given impetus by the rise of absentee ownership in the mid-1800s. The reporting function

[20] Accountants have long voiced an awareness of the influence of environment upon their profession. In *The Great Frontier* Webb addresses the forces that have shaped that environment. Webb was a historian, not an accountant, and he did not address accounting explicitly, but there are direct implications for accounting in Webb's ideas. Regarding The Great Frontier, he states in *History as High Adventure* (p. 183): "[The main] thesis is that the interaction between the civilized metropolis of Europe and the uncultured Great Frontier exerted a profound influence on the drama of Western civilization for more than 450 years and has largely determined the nature of that drama."

[21] As Webb explains in *History as High Adventure* (pp. 18–19): "Slowly the thesis emerged, the boom hypothesis, around which the story was to be told. The Great Frontier precipitated a boom on the Metropolis, a boom of gigantic proportions which began when Columbus returned from his first voyage and accelerated until all the new lands had been appropriated. This boom accompanied the rise of modern civilization and attended the birth of a set of new institutions and ideas designed to service a booming society, chief among them modern democracy and capitalism and the idea of progress. The small booms we know, based on oil or gold or soil, burst when that on which they are based is depleted. They have all been temporary, and the period in which they existed has been considered abnormal. But this big boom, based on all the resources of the Great Frontier, lasted so long that it was considered normal and its institutions permanent. By about 1900 the Great Frontier, of which the American Frontier was a fragment, began to close, and as it closed the idea of progress and the efficacy of democracy and capitalism were questioned, put in strain, and since 1914 these boom-born ideas and institutions have been fighting a defensive action. Unless we find some means to restore the boom, future historians may look back on the period from 1500 to 1950 as the Age of the Great Frontier, the most abnormal period in the history of mankind. So ran the argument."

[22] Ibid. (pp. 19-20). Webb states: "In the realm of economics I advanced the theory of the dual circulation of wealth, which, if true, might lead the economists to re-examine their subject and data and their basic assumptions. The economists have thus far treated wealth as if it had but one motion, circulation from hand to hand among the people. Actually, since the discoveries [of the Great Frontier] if not before, wealth has had two motions. It circulates horizontally among the people, and in modern times it has moved vertically between the people and the sovereign, and the character of its vertical movement has had profound effects on modern institutions."

conveys (via reports) interpretation of the facts recorded in the accounts. (Recall that the accounts themselves already contain *an* interpretation of the transactions, namely the periodic income determined in the closing process.)

Policy

Associated with the emergence of a financial reporting function has been the evolution of a policy-making structure for reporting and accounting. Though still evolving, certain characteristics of this policy structure can be discerned. It is essentially a power function concerned with *how* to interpret/report accounting and other related data. Because policy relates to interpretation, it focuses not only on reporting (i.e., transactions in the aggregate) but also on accounting for certain types of individual transactions (i.e., how to interpret and, therefore, how and when to record a particular transaction, for example, lease transactions and research and development costs).

Although policy addresses how to interpret the transactions of a business (both individually and in the aggregate), policy cannot change or manipulate the transactions themselves, at least not directly. Of course, knowledge of how policy will interpret a given transaction may Pinfluence in what manner an organization executes that transaction (i.e., its form) or whether it enters into the transaction at all.

A Limitation On Policy?

Regarding accounting, Schrader said:

> . . . In this paper, it was assumed that the relevant data [of accounting] were exchanges. This assumption could be abandoned and attention could be directed to other phenomena, but not without changing the character of accounting.[23]

One can ponder, therefore, the likelihood that policy might dictate a change in the relevant data of accounting from exchanges to some other focus, to, for example, accumulating information useful to decision makers. Could policy do this and perhaps change the character of accounting? The author argues that the answer may be negative, that there might be a limitation on the degree that the historical/transaction orientation of accounting can be altered.

The possible restriction that may limit the policy function (and, consequently, reporting also) is related to the predominant activity of modern business organizations themselves (i.e., they engage in transactions; they strive for profit; they always have and always will—unless the nature of the economy should change). Regardless of what the policy function may say the respective roles of accounting and reporting are, organizations will still engage in transactions and still have a need to collect a historical record of these transactions. In other words, the role of the present accounting mechanism will still be performed, in spite of what policymakers might say the role of accounting is. It can be argued,

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[23] Schrader, "An Inductive Approach to Accounting Theory," 649.

therefore, that accounting will not be fundamentally modified by policy. Policy may require other data to be collected and reported, but the basic transaction schema will remain. Profit is attained through transactions. As long as organizations strive for profit, transactions will dominate.

CONCLUSIONS

First, accounting has all of the elements of a historical function concerned with recording and interpreting the transactions of a business enterprise. This is consistent with the definition of history presented earlier. The dominant pattern of interpretation of accounting (i.e., income determination) is related to the profit motive, the driving force of modern business.

In addition, financial reporting is the mechanism for communicating (via reports) interpretation of the transactions recorded in the accounting process (a process that in itself embodies *an* interpretation of those transactions, that is, net income). Financial reporting has risen to prominence since the advent of absentee ownership. Financial reporting is heavily influenced if not dominated (at least in the United States), by an emerging power function (accounting policy) that designates *how* accounting is to be interpreted and, with other data, reported.

Finally, the nature of business activity itself (i.e., transactions) might impose a limitation upon the policy function.

In summary, viewing accounting as a historical function provides insight into the current state of the accounting environment. In addition, such a viewpoint may prove to be useful for research in accounting, reporting, policy, and auditing.

A Study of the Relationship between Three Business Flows: Some Evidence from Singapore

BRIAN ANDREW, LLOYD AUSTIN, and ANDREW CHEW*

Companies publish financial statements that report the profit or loss for the period and the fund of working capital generated from the operations (WCFO) of the business. Companies, however, rarely report the amount of cash generated from operations (CFO) in their financial statements despite the importance attached to the prediction of future cash flows in the accounting literature. The need to provide information useful to financial statement users for predicting future cash flows was stressed by the Financial Accounting Standards Board (FASB) in its Statement of Financial Accounting Concepts No. 1:

Financial reporting should provide information that is useful to present and potential investors and creditors and other users in assessing the amount, timing, and uncertainty of prospective cash receipts. . . . Since investors' and creditors' cash flows are related to enterprise cash flows, financial reporting should provide information to help investors, creditors and others assess the amount, timing and uncertainty of prospective net cash inflows to the related enterprise.[1]

In view of the emphasis on providing information useful for assessing the amounts, timing, and uncertainty of future cash flows, it is somewhat surprising that FASB Concepts Statement No. 1 suggested the superiority of accrual accounting profit over information on enterprise cash flows:

Information about enterprise earnings based on accrual accounting generally provides a better indication of an enterprise's present and continuing ability to gener-

[1] Financial Accounting Standards Board, Statement of Financial Accounting Concepts No. 1: *Objectives of Financial Reporting for Elements of Financial Statements of Business Enterprises* (Stamford, Conn.: FASB, 1978), viii.

ate cash flows than information limited to the financial aspects of cash receipts and payments.[2]

This preference for accrual accounting profit over information on cash flows reflects the traditional accounting perspective that views profit as a better measure of the economic performance of the firm[3]), but it ignores the link between past and future cash flows. One can argue that, in any attempt to predict future cash flows, information on past cash flows may be more important than accrual accounting profit, or perhaps that both are necessary because they provide different representations of the money flows through a business.

Accounting allocations have been the subject of considerable debate, with many theorists devoting considerable effort in arguing the merits of various allocation methods and in devising better ways to allocate costs and revenues between periods. The futility of this exercise was highlighted by Arthur L. Thomas,[4] who argued that all accounting allocations were arbitrary and that "financial accounting has no defensible theory of allocations."[5] His study addressed the fundamental question of the usefulness of accounting profit measurement based upon arbitrary allocations and noted the "widely recognized tendency of financial analysts to eliminate at least the depreciation allocations from the calculation of net income, and to report 'cash flow income' instead."[6]

The type of "cash-flow" income Thomas referred to is an inadequate representation of a firm's actual cash flow. Removing the depreciation allocation from the calculated profit will normally generate an estimate of the WCFO rather than the CFO. The relationship between the three flows is depicted in Exhibit 1.

This sequence of the three items reflects the process required to estimate the CFO under the accrual accounting system because firms do not presently publish cash-flow statements in Singapore or a figure for their CFO. Analysts are, thus, forced to estimate the CFO figure indirectly.

PREVIOUS STUDIES

A number of studies report statistical tests of the relationship between CFO and other indicators of firm performance, such as profit and WCFO, but the results present some conflicting evidence. An important recent study was that of Thode et al., who found that CFO was a distinct mea-

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[2] Ibid.

[3] Y. Ijiri, "Cash Flow Accounting and Its Structure," *Journal of Accounting, Auditing and Finance* (Summer 1978), 331–48.

[4] A. L. Thomas, *The Allocation Problem in Financial Accounting Theory*, Studies in Accounting Research No. 3 (Evanston, Ill.: American Accounting Association, 1969), 20; *The Allocation Problem: Part Two*, Studies in Accounting Research No. 9 (Sarasota, Fla.: American Accounting Association, 1974).

[5] Thomas, *The Allocation Problem in Financial Accounting Theory*, iii.

[6] Thomas, *The Allocation Problem: Part Two*, 99.

Exhibit 1. Relationship between Profit, WCFO, and CFO

Profit	WCFO	CFO
Deduct/Add nonfund items (e.g., depreciation, amortization, equity accounting income)	Plus/Minus changes in working capital items other than cash (e.g., inventory)	

sure "not easily inferred from other performance measures."[7] The results of that study can be contrasted with the earlier studies of Gombola and Ketz[8] and Drtina and Largay,[9] who found evidence that CFO was not statistically different from WCFO, thus providing support for the practice of using WCFO as a proxy for CFO.

A second type of study investigated the claim that the earnings number was a better predictor of future cash flows. For instance, Bowen et al.[10] were unable to confirm the FASB's assertion that earnings were superior to other flow measures as a predictor of future cash flows. Bowen et al. also examined the correlation between CFO, profit, and a range of other alternative measures; their findings indicated that CFO was statistically different from earnings, thus supporting the findings of Thode et al.[11]

Finally, a limited number of studies have tested the informational content of CFO. Largay and Stickney contended that a series of negative CFOs may be a critical indicator of impending corporate failure,[12] but their study of the W. T. Grant Company failure may have limited scientific value. The study by Casey and Bartczak provided limited support for Largay and Stickney's contention[13]; it found significant differences between the mean values of three cash-based variables for failed and nonfailed companies. However, the same study found that the cash-related data performed less well in distinguishing failed and nonfailed companies than six accrual-based ratios, on both multiple discriminant analysis and

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[7] S. F. Thode, R. E. Drtina, and J. A. Largay, "Operating Cash Flows: A Growing Need for Separate Reporting," *Journal of Accounting, Auditing and Finance* (Winter 1986), 55.

[8] M. J.Gombola and J. E. Ketz, "Alternative Measures of Cash Flow: Part II," *Cash-flow* (November 1981).

[9] R. E. Drtina and J. A. Largay, "Reporting Cash Flows and Estimating Distributable Funds: Some Preliminary Results," *The American Business Review* (June 1985).

[10] R. M. Bowen, D. Burgstahler, and L. A. Daley, "Evidence on the Relationships between Earnings and Various Measures of Cash Flow," *The Accounting Review* (October 1986), 713–25.

[11] Thode, Drtina, and Largay, "Operating Cash Flows: A Growing Need for Separate Reporting."

[12] J. A. Largay and C. P. Stickney, "Cash-Flows, Ratio Analysis and the W.T. Grant Bankruptcy," *Financial Analysts Journal* (July-August 1980), 51–54.

[13] Ibid.

logistic tests. Further, the addition of these three cash variables to the six ratios did not significantly increase the discriminatory power of the ratios.

Although the empirical results indicate that accrual-based profit influences share prices (see, for example, Ball and Brown, and Beaver and Dukes[14]), some evidence also indicates that profit may not be closely related to actual cash flows. Further, it appears that WCFO may not provide additional information to that contained in the profit number (see, for example, Patell and Kaplan[15]) and that the CFO may be significantly different from profit and possibly even from WCFO. As cash-flow information may be a useful indicator of the solvency of the firm, such information may benefit users other than shareholders. Consequently, this study provides further evidence on the relationship between CFO and two other flow variables, profit and WCFO, and notes that the results of the studies by Thode et al. and Bowen et al.[16] were not limited to U.S. data; the results were similar when Singapore data were used.

OBJECTIVES OF THE STUDY

The present study concerned the understanding of the relationship between the three accounting flows: profit, WCFO, and CFO, and, indirectly, their information content. It was triggered by Beaver's comments that "for the most part earnings changes and cash flow changes are very highly correlated."[17] The purpose of this study is to provide some empirical evidence concerning this relationship.

This study also offers some evidence on issues related to funds statements. It has been argued (e.g., Heath[18]) that funds statements are ambiguous and misleading, and they have been found not to articulate with the profit and loss statement and balance sheet[19]; the fund of working capital is only rarely interpreted in the same way as the balance sheet and funds statement.[20] In view of this, it appears reasonable to consider whether the funds statement contains information that is not contained in the profit and loss account, and the correlation between the two flows,

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[14] R. Ball and P. Brown, "An Empirical Evaluation of Accounting Income Numbers," *Journal of Accounting Research* (Autumn 1988), 159–78; W. Beaver and R. Dukes, "Interperiod Tax Allocation, Earnings Expectations, and the Behaviour of Security Prices," *Accounting Review* (April 1972), 820–32.

[15] J. Patell and R. Kaplan, "The Information Content of Cash Flow Data Relative to Annual Earnings," Working Paper, Stanford University, 1977, in J. A. Largay, and C. P. Stickney, "Cash-Flows, Ratio Analysis and the W.T. Grant Bankruptcy," *Financial Analysts Journal* (July-August 1980), 51–54.

[16] Thode, Drtina, and. Largay, "Operating Cash Flows: A Growing Need for Separate Reporting," 55; and Bowen, Burgstahler, and Daley, "Evidence on the Relationships Between Earnings and Various Measures of Cash Flow," 713–25.

[17] W.H. Beaver, *Financial Reporting: An Accounting Revolution* (Englewood Cliffs, N.J.: Prentice Hall, 1981).

[18] L. C. Heath, "Let's Scrap the 'Funds' Statement," *Journal of Accountancy* (October 1978), pp. 94–103.

[19] B. H. Andrew and A. S. Chew, "The Working Capital Concept of Funds: A Singapore Survey," *Singapore Accountant* (December 1985), 12–14.

[20] J. B. Ryan, C. T. Heazlewood, and B. H. Andrew, *Australian Company Financial Reporting: 1980*, Australian Accounting Research Foundation Study Number 9.

profit and WCFO, may provide some indication of the usefulness of funds flow information.

A third issue concerns the provision of information to financial statement users other than shareholders. It can be argued that cash-flow information may be more relevant than accrual accounting measures in appraising business solvency because cash flows provide a firm's capacity to settle its obligations. Thus creditors, lenders, and management may prefer cash-based rather than accrual-based information for part of their analysis.

Additionally, management performance is judged by the profits of the firm, yet capital budgeting decisions are made on a cash-flow basis. Any substantial short-run differences in these two flows may lead to suboptimal management decisions or to erroneous appraisals of management performance. Consequently, management should be aware of the extent of association between the profit and CFO.

RESEARCH METHOD

The population of Singapore's incorporated companies whose shares are publicly traded on the Singapore Stock Exchange provided an excellent base to test the relationship between the three flows. The population of 108 nonbanking companies whose balance sheet dates fell during the period 1 January 1985 to 31 December 1985 was selected for study because this was the most recent year for which the annual reports of all the companies were available. To provide further evidence, the same group of companies that reported in the years ended 31 December 1983 and 1984 were similarly analyzed. Banks were excluded because their accounts are subject to separate regulations, and it was not possible to reconcile asset changes adequately to their disclosed profit using publicly available information. Further, companies that had merged with another company were similarly excluded because the financial statements of these companies were likely to be affected by the merger.

The profit figures for the study were taken directly from the profit and loss account, but it was not possible to do the same for WCFO because it was important to have common definitions and measurements of the constructs used to avoid "confounding" effects and because several definitions of the term *funds* are possible. Thus, the concept of funds is ambiguous. Because most of the companies (94 percent) in the population reported in their funds statements a figure for funds from operations that represented the fund of working capital generated from operations, *funds* was defined as working capital for the study. Where the funds from operations represented a fund other than working capital (e.g., liquid funds from operation), the working capital generated from operations was calculated from the information contained in the accounts.

No company in the survey disclosed its CFO. This amount was estimated for the companies using the method adopted by Largay and

Stickney.[21] This approach differs from that of the other studies that calculated the CFO amount by using an algorithm that simply made a uniform adjustment for each current item in the accounts. The danger of the algorithm-based approach includes misclassification of items between companies and over time within the same company.[22] To overcome these problems, the nature of each current item was separately judged for its impact on the CFO and the appropriate adjustments made. This method is outlined in Exhibit 2, which shows the relationship between the three variables (profit, WCFO, and CFO) and the method adopted to calculate the WCFO figure where necessary.

As the exhibit indicates, the three flows (profit, WCFO, and CFO) are derived from the same information set and include a substantial number of common items. This "contamination"[23] problem means that the three variables cannot be viewed as independent of one another. The association between the two variables that are regularly reported in published accounts (profit and WCFO) could be expected to be closer than that between either of these two variables and CFO. This follows because WCFO and profit differ only by the allocation of certain nonperiod costs and revenues, such as depreciation, so that all the items that are reflected in the WCFO figure are also reflected in the profit figure. The large group of common items represented in these two flows leads to the expectation that the two flows will be highly correlated. CFO could be expected to be

Exhibit 2. The Estimation of CFO

	PROFIT
Plus	Expenses not reducing working capital (e.g., depreciation)
Less	Revenues not increasing working capital (e.g., equity accounting income)
Equals	Funds (Working Capital) from Operations (WCFO)
Plus(Less)	Decreases (Increases) in noncash working capital assets (e.g., accounts receivable and inventories)
Plus(Less)	Increases (Decreases) in noncash working capital liabilities (e.g., accounts payable)
Equals	Cash from Operations (CFO)

Note: For a discussion of the issues and difficulties associated with calculation of a firm's CFO, see R. E. Drtina and J. A. Largay, "Reporting Cash Flows and Estimating Distributable Funds: Some Preliminary Results," *American Business Review* (June 1985).

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[21] Largay and Stickney, "Cash-Flows, Ratio Analysis and the W.T. Grant Bankruptcy," 51–54.
[22] M. J. Gombola and J. E. Ketz, "A Note on Cash Flow and Classification Patterns of Financial Ratios," *The Accounting Review* (January 1983), 105–14.
[23] F. J. Kohout, *Statistics for Social Scientists* (New York: John Wiley, 1974), 165.

much less closely correlated with either of the other flows because it contains fewer common items and also because the CFO of a business will reflect the result of management's short-run investment decisions in regard to noncash current assets and liabilities, as well as decisions of inventory levels, credit policy, and short-term financing.

RESULTS AND DISCUSSION

After the three variables for each company were calculated, a cross-sectional ordinary least squares (OLS) regression was calculated for the pairs of variables, CFO and profit, and CFO and WCFO, using the SAS statistical package. The object of this analysis was to determine whether the undisclosed dependent variable (CFO) could be estimated from a knowledge of either of the independent variables (profit and WCFO) that are disclosed in published financial statements and to test the strength of any linear relationship between CFO and either of the other variables. CFO was expected to be related to the other two variables because of the large number of common items. But because CFO will tend to reflect the short-run investment decisions of management noted above, it was not expected that the regression equation would allow accurate estimation of CFO from either of the disclosed variables. The results of the OLS regression appear in Exhibit 3.

The product moment correlation coefficients for both WCFO and profit in association with CFO are extremely low for 1988 and are not sig-

Exhibit 3. Ordinary Least Squares (OLS) Regression CFO,WCFO and Profit

CFO	n	α	β	F	r^2	r
$CFO = \alpha + \beta\ WCFO + e$						
1983	110	5497 (1.69)	0.120 (0.83)	0.70	0.0064	0.0800
1984	112	–5007 (1.73)	1.141* (8.09)	85.40*	0.3729	0.6106
1985	108	2264 (1.04)	0.460* (3.70)	13.67*	0.1142	0.3379
$CFO = \alpha + \beta\ Profit + e$						
1983	110	5093 (1.66)	0.233 (1.23)	1.52	0.1385	0.1170
1984	112	8814* (2.85)	–0.149 (–1.27)	1.01	0.0144	–0.1207
1985	108	6101* (3.09)	0.251* (2.45)	6.00*	0.0535	0.2313

The t score is in parentheses below the number.
*Significant at $p \leq .05$.

nificant at p≤ .05. It is unlikely, therefore, that sufficiently accurate estimation of CFO would be possible from either of the other two variables in 1988. In 1984, the position was less clear because the correlation between CFO and WCFO was quite high (r =0.6106), and significant at p≤ .05, but the association between CFO and profit was negative (r=-0.1201), and not significant. The 1985 result is different again because both correlations were significant at p≤ .05. The correlations between CFO and profit for 1988 and 1984 are consistent and indicate little relationship between the variables, but the 1986 correlation between CFO and profit is significant. This indicates the lack of stability in the relationship and the difficulty of estimating CFO from the published profit figure. The correlation coefficient of 0.6106 for the relationship between CFO and WCFO for 1984 does indicate a strong relationship between these variables for 1984. The significant correlation between CFO and WCFO for 1985 indicates that an analyst may have found it possible to estimate CFO from the published WCFO figures available in those years. However, in general the regression equations seem unstable and to provide an inadequate basis for estimation of the dependent variable CFO.

The coefficient of determination (r^2) or "goodness of fit" for these regression equations may help to explain the relationship. This was negligible for CFO and profit in all years and for CFO and WCFO in 1983 and 1985. Even in 1984, only 37.29 percent of the variation in the dependent variable (CFO) was explained by the change in the independent variable (WCFO), which is not high in view of the number of common items included in each.

To provide a further test of the strength of association between the three flows, zero-order cross-sectional correlations for each pair of variables were calculated for each year. In view of the evidence of a low or nonexistent linear relationship between the variables revealed by the regression analysis and the apparent lack of normal bivariate distributions, it was considered appropriate to use the Spearman rank order correlation test to determine the strength of any other "monotonic" relationship[24] between the variables. Additionally, the Pearson "product-moment" correlation procedure could be adversely affected by the many negative scores for individual variables, and the Spearman rank correlation procedure has proven to be almost as powerful as its classical counterpart—the Pearson "product-moment" correlation method—under conditions favorable to the latter and even more powerful than the parametric method when its assumptions are violated."[25]

To present a complete picture of the relationship between the various flows, the zero-order rank correlation matrix includes two separate mea-

[24] R. I. Iman and W. J. Conover, *Modern Business Statistics* (New York: John Wiley, 1983), 351.

[25] M.L. Berenson and D.M. Levine, *Basic Business Statistics—Concepts and Allocations*, 2nd ed. (Englewood Cliffs, N.J.: Prentice Hall, 1983).

sures of operating profit before extraordinary items, as well as the three flows considered to date. The two additional figures extracted from the accounts of the companies in the survey were operating profit after tax and before minority interests (OPBMI) and operating profit after tax and after minority interests (OPAMI). The results of the zero order rank correlation analysis are presented in Exhibit 4.

The CFO was not highly correlated with any of the other four variables, especially when compared with the high correlations between the other variables. Nine of the twelve 8-correlation coefficients for CFO with the other four variables lie within a very narrow range of 0.3453 to 0.3851. Only the 1984 correlations between CFO and profit, and CFO and WCFO could be viewed as indicating a strong monotonic relationship between any of the other variables and CFO. But even the highest of these coefficients, 0.5186, for the relationship between CFO and WCFO for 1984, is well below the lowest of the other rank correlations (0.7188 for WCFO and OPAMI in 1985).

In view of the high correlations between OPBMI, OPAMI, and profit, continuing to include the two operating profit measures in further tests of correlation between the variables was considered unnecessary. Profit was selected as the appropriate net revenue flow because it is a clearly understood figure that is calculated on the same all-inclusive basis for all companies. The operating profit measures are likely to differ greatly between firms because of different interpretations of unusual or extraordinary items, and the correlation of operating profit figures may be adversely affected by such interpretations.

A different factor that may affect the correlation between the variables is the size of the companies. Consequently, the three variables (profit,

Exhibit 4. Zero-Order Rank Correlation Matrix

		Profit	OPBMI	OPAMI	WCFO
CFO	1983	0.3849	0.3747	0.3851	0.3784
	1984	0.4366	0.3553	0.3453	0.5186
	1985	0.3838	0.3762	0.3744	0.4018
WCFO	1983	0.8418	0.8166	0.8139	
	1984	0.8386	0.8042	0.7928	
	1985	0.7345	0.7216	0.7183	
OPAMI	1983	0.8662	0.9976		
	1984	0.8983	0.9953		
	1985	0.8891	0.9916		
OPBMI	1983	0.8612			
	1984	0.9066			
	1985	0.8924			

All the correlation coefficients were significant at $p \leq .05$.

WCFO, and CFO) were divided by total assets to mitigate any spurious correlation caused by differences in firm size. In addition, the measures were normalized using net assets to ensure that the results were not specific to the scaling procedure selected, but only the first set of normalized rank correlations are reported in Exhibit 5 because of the similarity between the two sets of scaled results.

These results tend to support the results obtained using the absolute numbers because profit and WCFO can be seen to be highly correlated, but CFO is much less strongly associated with the other two variables. The Spearman rank correlation coefficients using the normalized figures reveal lower correlations between the variables in all cases except for that between WCFO and profit in 1984, although the overall picture remains the same as that indicated by the absolute numbers. This tends to indicate that the firm size factor was not a strong factor in the correlations.

Because the three variables are derived from the same data set and include a substantial number of common items, it is highly likely that the association of one variable with another is influenced by the presence of the third variable. Consequently, first-order correlation coefficients were calculated to find the individual level of association between any two of the three variables. This procedure indicates the strength of association between two variables when the effect of the third variable is held constant (i.e., partialing out the effect of the third variable). The objective of this analysis was to test whether any one of the variables in the model acted as the driving force in the relationship between the other two. The results of this analysis are shown in Exhibit 6.

The correlation between WCFO and profit was not materially affected when the influence of CFO was removed, indicating that CFO had little impact on the association between these two variables. However, the partial correlations between the other two variables and CFO are considerably smaller than the original zero-order correlations, and in both years the first-order correlation between CFO and profit was negligible and not significant at the 5 percent level of confidence.

Exhibit 5. Zero-Order Rank Correlation Matrix
Normalized Numbers

	Profit	WCFO
CFO 1983	0.3002	0.3006
1984	0.3709	0.4519
1985	0.3318	0.3483
WCFO 1983	0.7379	
1984	0.8610	
1985	0.7312	

All the correlation coefficients were significant at p≤ .05.

Exhibit 6. First-Order Rank Correlation Matrix

		Profit	WCFO
CFO	1983	0.0766	0.1753
	1984	−0.0274	0.3297*
	1985	0.1428	0.1913*
WCFO	1983	0.8170*	
	1984	0.7968*	
	1985	0.6863*	

* The first-order correlation coefficients in Exhibit 6 were significant at p ≤ .05.

The first-order correlations of profit with CFO (1983, r_s = 0.0786; 1984, r_s = 0.0274, 1985; r_s = 0.1428) when compared with those for CFO and WCFO (1983, r_s = 0.1753; 1984. r_s = 0.3297; 1985, r_s = 0.6863) confirm the impression derived from the zero-order correlations above that WCFO may provide a better explanation of CFO than does profit. However, the first-order correlations are low, and the 1983 correlation is not significant. It is impossible to conclude from these data that either WCFO or profit have any significant explanatory power in relation to CFO.

CONCLUSION

This study addressed the empirical question of whether accounting profits are associated with business cash flows in the short run. The study used data for Singapore to support the conclusions of Bowen et al. and Thode et al.,[26] who used U.S. data. There is strong evidence that profit is an important variable impounded into the share price because it is a useful proxy that facilitates the estimation of future cash flows, and the "multi-period CAPM (capital assets pricing model) values an asset based on its expected cash flows and the expected rate of return the market requires for the risk of those cash flows"[27]; any short-run difference between a firm's profit and its CFO may be of interest to the users of financial information.

The limited short-run association between CFO and profit may suggest that share prices do not reflect a firm's CFO. Therefore CFO may not be relevant for decisions that impact on share prices. But this short-run asymmetry between profit and CFO may be critical to lenders who rely on a firm's cash flows to provide funds for the repayment of debt. The accrual process may obscure a deteriorating cash-flow position, and the

[26] Bowen, Burgstahler, and Daley, "Evidence on the Relationships Between Earnings and Various Measures of Cash Flow," 713–25; and Thode, Drtina, and Largay, "Operating Cash Flows: A Growing Need for Separate Reporting," 55.
[27] R. L. Watts and J. L. Zimmerman, *Positive Accounting Theory* (Englewood Cliffs, N.J.: Prentice-Hall, 1988), 27.

disclosure of current and past cash flows may provide information different to that contained in reported profits. Further research is necessary to confirm whether this interpretation is correct and the nature and usefulness of the different information provided.

The close association between WCFO and profit supports the argument advanced by some writers[28] that WCFO is not a very useful indicator of business solvency and is redundant in not adding information to that already revealed in the profit and loss statement. This signals the need to seek other indicators of performance. It is possible to conclude tentatively that CFO rather than WCFO should be disclosed in published accounts if profit is to be supplemented with the disclosure of any other flow variable. This is because CFO may contain information different to that contained in the accounting profit figure and because it may emphasize a firm's short-run solvency and cash management. This type of information could be useful to creditors and potential investors who are interested in a firm's solvency even if the CFO is irrelevant for decisions that impact directly upon share prices. Both of these questions require further research.

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[28] Heath, "Let's Scrap the 'Funds' Statement,"pp. 94–103; L. C. Heath and P. Rosenfield, "Solvency: The Forgotten Half of Financial Reporting." *Journal of Accountancy* (January 1979), 48–54; and E. E. Comiskey, "Assessing Financial Quality: An Organizing Theme for Credit Analysts," *Journal of Commercial Bank Leading* (December 1985), 32–47.

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Impact of Socially Motivated Quality Cost Control Policies on Cost Behavior

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Since the end of the World War II, two distinct socially motivated quality control policies have emerged. In America and portions of Europe, a production-oriented policy was motivated by the need for mass-produced manufactured items. In Japan a zero-defects policy was motivated by the need to rebuild the economy and to restore public confidence in Japanese-made goods.[1] The emergence of these different policies has had a significant impact on market shares obtained in the world markets for manufactured goods. As Lee noted,[2] the zero-defects policy implemented by the Japanese has resulted in substantial increases in market shares of Japanese firms at the expense of U.S. and other manufacturing firms in the West.

As implied above and supported by the American Society for Quality Control and Schonberger,[3] product quality, as compared to price, has become an increasingly important determinant of competitiveness. However, the cost of improved quality is ultimately reflected in price, and, therefore, quality control policies cannot ignore the costs necessary to achieve greater quality. In addition, stockholders and management have

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[1] The diversity of policies has been noted empirically through the testing of attitudes of first-line supervisors in Japan and the United States. See David A. Garvin, "Quality Problems, Policies, and Attitudes in the United States and Japan: An Exploratory Study," *Academy of Management Journal* (December 1986), 653–673.

[2] John Y. Lee, *Managerial Accounting Changes for the 1990s* (Artesia, Calif.: McKay Business Systems, 1987), 1.

[3] American Society for Quality Control, "The Quality Manifesto," *Quality Progress* (July 1986), 14–15; and Richard J. Schonberger, *World Class Manufacturing* (New York: The Free Press, 1988), 123.

financial performance goals, such as earnings per share, return on invest-
ment, and stock price, that may be impacted by significant changes in
expenditures on quality costs. Differences between the two cost control
policies are manifested in the mix of cost components of the total quality
cost. Understanding the behavior of the individual cost components can
provide a basis for analyzing, comparing, and reconciling the two distinct
quality cost control policies. Ideally, such knowledge should aid manage-
ment in selecting a mix of quality cost expenditures that will achieve a spe-
cific goal for product quality.

Societal factors that have led to the two distinct quality control policies
are analyzed in this paper. The ways in which these societal factors impact
the various components of total quality cost are demonstrated. The paper
first presents a basic model for the relationships among cost components in
a quality control policy. Next is a discussion of the production-oriented
approach to quality control and its associated costs. This section is followed
by a discussion of the zero-defects approach to quality control and its asso-
ciated costs. Next, several societal factors responsible for the differences in
quality control policies are identified and contrasted. The paper concludes
with a description of emerging societal factors and how they may affect the
choice of a quality control policy.[4]

A BASIC MODEL OF QUALITY CONTROL COSTS

According to previous research by Campanella and Corcoran, and Veen,[5] the
traditional view is that total quality cost (T) is made up of three major cost

[4] Articles related to quality control in the accounting literature typically give an overview of the
ramifications of quality control and, in some instances, methodology for implementing a quality
control program. Although definitions of quality and quality costs are often included, neither an
in-depth analysis of the costs nor social factors affecting quality control policies are presented.
See John Clark, "Costing for Quality at Celanese," *Management Accounting* (March 1985),
42–46; John Clemmence, "Quality Control: Your Firm Can't Cope without It," *Accountancy*
(December 1985), CX, 132–33; Richard J. Filer and Lean R. Eiswerth, "Quality Control and
Associated Costs," *Management Accounting* (September 1966), 37–44; Paul N. Gordan,
"Quality Assurance: Cost or Benefit?" *Corporate Accounting* (Fall 1985), 75–77; Stanley
Oliver, "The Management Accountant's Role in Quality Control," *Management Accounting*
(England) (March 1987); Idem, "The Management Accountant"s Role in Quality Control,"
Management Accounting (England) (October 1986), 32–35, and "The Management
Accountant"s Role in Quality Control—Part 2," *Management Accounting* (England) (March
1987), 28-30; Edwin Whiting and Malcolm Walsh, "What Is Quality and How Much Does It
Cost?" *Accountancy* (February 1986), 146–48. For the most detailed literature on how quality
control relates to a cost accounting system, see Wayne J. Morse, "Measuring Quality Costs,"
Cost and Management (July-August 1983), 16–20, and Morse and Hearsed P. Roth, "Let's Help
Measure and Report Quality Costs," *Management Accounting* (August 1983), 50–53, and "Why
Quality Costs Are Important," *Management Accounting* (November 1987), 42–43] , and Morse
and Roth in association with K.M. Poston, *Measuring, Planning, and Controlling Quality Costs*
(Montvale, N.J.: National Association of Accountants, 1987), and John T. Hagan, ed.,
Principles of Quality Costs (Milwaukee: American Society for Quality Control, 1987).
[5] Jack Campanella and Frank J. Corcoran, "Principles of Quality Costs," *Quality Progress*
(April 1983), 16–22; and B. Veen, "Quality Costs," *Quality* (Summer 1974), 55–59.

elements: prevention costs (P), appraisal costs (A), and failure costs (F), or

$$T = P + A + F \tag{1}$$

Prevention costs improve quality and, as defined by Chauvel and Andre and Roth and Morse,[6] are investments in research and development, machinery, technology, and educational programs all designed to prevent defects from occurring during the production process.

Appraisal costs control quality and sometimes are referred to as *monitoring*, or *inspection, costs*. Expenditures for appraisal are designed to reduce the number of defective products released to customers. The appraisal process usually requires a certain degree of statistical sophistication to utilize sampling techniques to identify defective products. Although appraisal techniques reduce the number of defective products discovered externally, these techniques do not eliminate the need to rework defective products discovered internally. Examples of appraisal costs given by Chauvel and Andre[7] are inspection expenses of the quality control department and the equipment and premises necessary for inspections.

Roth and Morse define failure costs as (1) internal failure costs associated with products that fail to meet quality standards and result in manufacturing losses and (2) external failure costs incurred because inferior quality products are shipped to consumers.[8] These costs can be classified further into, but may not be limited to, the following four costs: rework costs (F_1); profits foregone from selling a defective unit (i.e., as a second or an irregular, F_2); costs of processing customer returns (F_3); and cost of lost sales (F_4).

The profits foregone from selling a defective unit and the cost of lost sales are of particular interest because they do not appear on a typical income statement. The cost of lost sales, the most difficult of the costs to quantify, is composed of sales that are lost when a customer discontinues buying a product because of dissatisfaction from receiving a defective unit.

Exhibit 1 depicts, in general, the relationships between each of the quality cost components and the number of defective units. This graph shows the inverse, nonlinear relationship between prevention and appraisal costs and the number of defective units. As prevention and appraisal costs decrease, the number of defective units increases. On the other hand, Juran asserts that prevention and appraisal costs rise, perhaps dramatically, as zero defects are neared.[9] The reason these costs are depicted as nonlinear with respect to the number of defective units is that diminishing returns may be expected from increased expenditures for reduction of defective units.

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[6] Alain H. Chauvel and Yves A. Andre, "Quality Cost: Better Prevent Than Cure," *Quality Progress* (September 1985), 29–32; and Roth and Morse, "Let's Help Measure and Report Quality Costs," 50–53.

[7] Chauvel and Andre, "Quality Cost: Better Prevent Than Cure."

[8] Roth and Morse, "Let's Help Measure and Report Quality Costs," 50–53.

[9] J. M. Juran, *Quality Control Handbook,* 3rd ed. (New York: McGraw-Hill, 1974), 5–12.

A linear relationship between each of the four failure cost components and the number of defective units also is depicted in Exhibit 1. These failure costs increase as defective units increase. On the other hand, failure costs approach zero as zero defects are neared. The assumption that these costs are linear with respect to the number of defective units is plausible for rework (F_1), profits foregone (F_2), and cost of processing customer returns (F_3) because of their nature. This assumption is less plausible for the cost of lost sales (F_4); indeed, it may be a nonlinear cost. Exhibit 1 suggests a dependency relationship in which the failure costs depend on the level of prevention (P) and appraisal (A) costs. Increasing (decreasing) expenditures on prevention (P) and appraisal (A) decreases (increases) failure costs. The relationships shown in Exhibit 1 are supported by previous research in the operations management area. (See, for example, Campanella and Corcoran, Chisholm, Juran, Kume, and Veen.[10])

Exhibit 1. Basic Model of Quality Cost Relationships
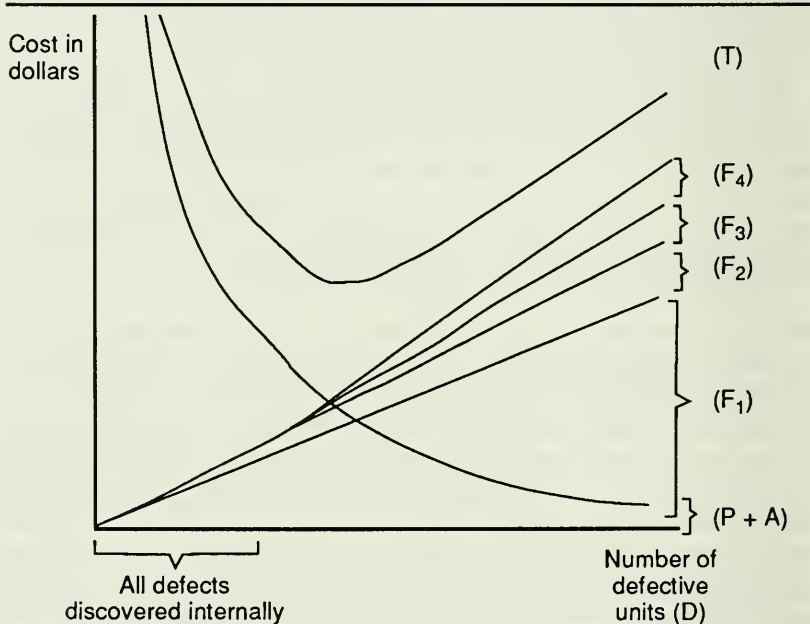
(T)	Total quality costs
(F_4)	Cost of lost sales
(F_3)	Customer return processing costs
(F_2)	Profit foregone
(F_1)	Rework costs
(P + A)	Prevention and appraisal costs

[10] Campanella and Corcoran, "Principles of Quality Costs," *Quality Progress,* 16–22; C.U. Chisholm, "Quality Assurance: A Review of Production Practice," *Quality Assurance* (June 1982), 55–60; Juran, *Quality Control Handbook;* Hitoshi Kume, "Business Management and Quality Costs: The Japanese View," *Quality Progress* (May 1985), 13–18; and Veen, "Quality Costs."

The quality cost model just presented provides a means to analyze and compare the quality cost components implicit in the two approaches to quality control: the production-oriented approach and the zero-defects approach. In addition, the model provides the basis for the discussion of the societal factors that have influenced the two quality control approaches.

PRODUCTION-ORIENTED APPROACH TO QUALITY CONTROL

From the time of the industrial revolution, U.S. manufacturers typically have adopted a production-oriented approach to quality control, which, according to Crosby, and Johnson and Kaplan,[11] permits an "acceptable" level of defective units. The acceptable level is determined primarily by production factors (such as units per hour or amount of downtime) rather than quality factors. This focus most likely is a result of the scientific management movement and economy of scale considerations. Under the production-oriented approach, most quality control costs are driven by the number of defective units produced. Therefore, rework costs (F_1) and the cost of processing returns (F_3) tend to be the primary cost concerns.

When determining the quality costs associated with the production-oriented quality control policy, the use of external financial reporting data may cause these costs to be underestimated. The reason for the underestimation is the exclusion from the income statement of the profits foregone from selling a defective unit (F_2) and the cost of lost sales (F_4). Therefore, the perceived costs of quality control may be significantly lower than the actual costs to the firm.

Given the current accounting principles for external reporting, the model of perceived production-oriented total quality costs differs somewhat from the basic model (1) and may be defined as follows:

$$T^P = P + A + F_1 + F_3 \qquad (2)$$

Noticeably absent are the profits foregone from selling a defective unit (F_2) and the cost of lost sales (F_4), which do not appear on the income statement.

Exhibit 2 illustrates the danger of relying on income-statement–based costs to determine total quality control costs. The perceived total quality costs (T^P), those reported on the income statement, are lower than actual quality control costs (T^A) when the profits foregone from selling a defective unit (F_2) and cost of lost sales (F_4) are not considered. As a result, a company may choose a quality control policy that has it operating at a defects level it perceives as being appropriate when, in fact, a different defects level would be more cost effective.

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[11] Philip B. Crosby, "The Management of Quality," *Research Management* (July 1982), 10–12; and H. Thomas Johnson and Robert S. Kaplan, *Relevance Lost* (Boston: Harvard Business School Press, 1987), 210.

Exhibit 2. Production-Oriented Approach to Quality Control
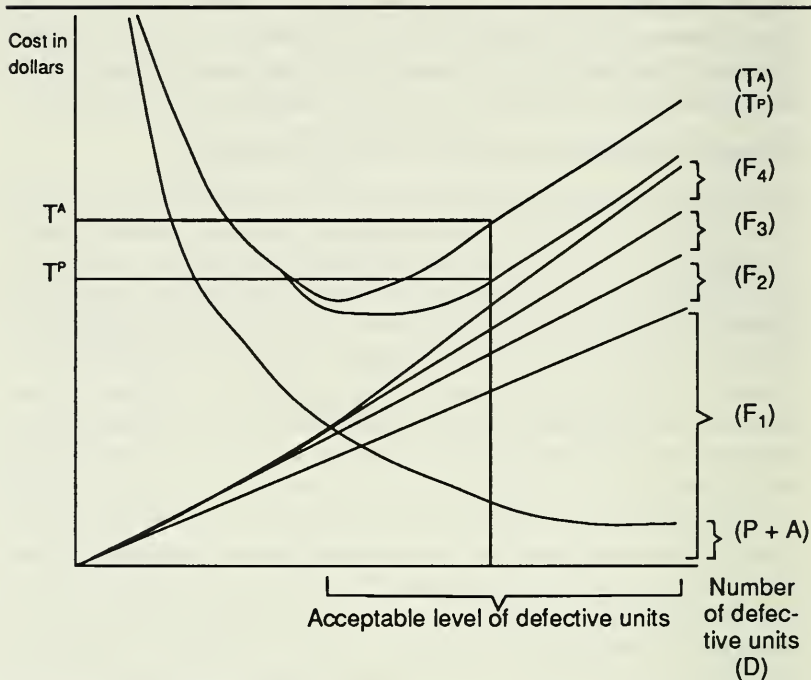
(T^A)	Actual total quality costs
(T^P)	Perceived total quality costs: $T^A - (F_2 + F_4)$
(F_4)	Cost of lost sales
(F_3)	Customer return processing costs
(F_2)	Profit foregone
(F_1)	Rework costs
(P + A)	Prevention and appraisal costs

ZERO-DEFECTS APPROACH TO QUALITY CONTROL

As Johnson and Kaplan noted,[12] Japanese management popularized a zero-defects approach to quality control costs. Under this approach, management attempts to eliminate product defects by increasing prevention costs (P). The zero-defects approach has found favor over a production-oriented approach for two reasons. First, consumer demand for higher quality products has given a competitive advantage to manufacturers that employ a zero-defects policy. Second, technological improvements in prevention techniques have made expenditure in this area more worthwhile.

Although the reduction of defective units to zero by increasing prevention likely will have an unfavorable effect on prevention costs, this

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[12] Johnson and Kaplan, *Relevance Lost*.

approach can have a favorable effect on each of the four failure costs and the appraisal costs. The possible reduction in failure and appraisal costs may more than offset the increased prevention costs. These cost relationships are explained below and can be surmised from Exhibit 3. Rework costs (F_1) are decreased, perhaps significantly, if prevention costs are increased because of the decrease in the number of defective units produced. However, rework costs are not changed if zero defects are attained by increasing only appraisal costs (A). (This relationship cannot be illustrated two-dimensionally on Exhibit 3.) Increasing appraisal expenditures reduces the number of defective units released to customers, but the same

Exhibit 3. Zero-Defects Approach to Quality Control

(T^z)	Total quality costs
(F$_4$)	Cost of lost sales
(F$_3$)	Customer return processing costs
(F$_2$)	Profit foregone
(F$_1$)	Rework costs
(P + A)	Prevention and appraisal costs
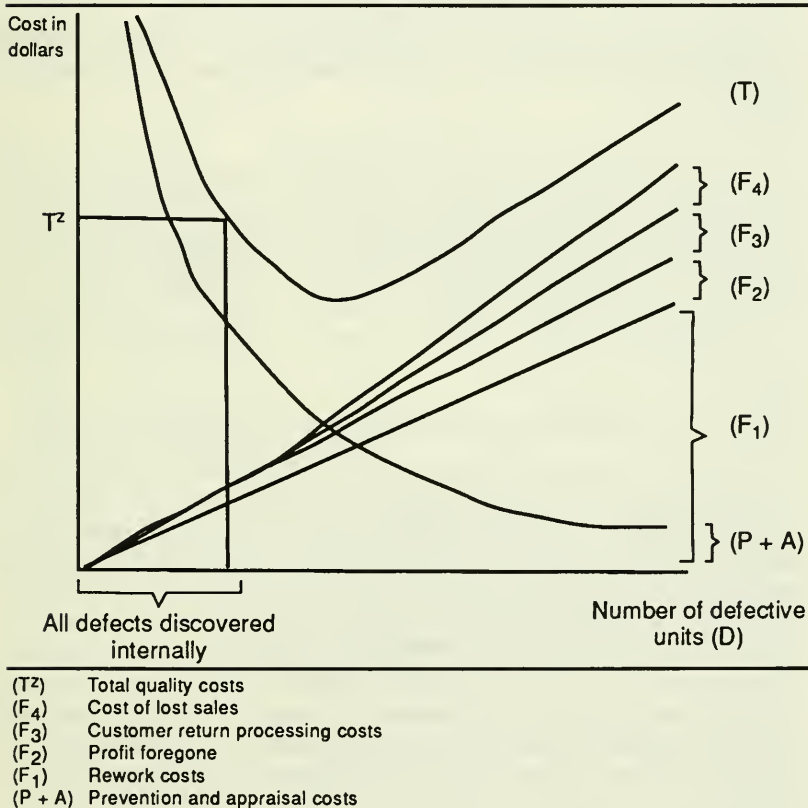
number of defective units are discovered internally and some or all (depending on management policy) are reworked.

The profit foregone from selling a defective unit (F_2) decreases as prevention costs (P) are increased, again, because of the decrease in the number of defective units produced. But profit foregone does not change if only appraisal costs (A) are increased, again, because the same number of defective units are discovered internally and some or all are sold at a reduced profit.

The two remaining components of failure costs, costs of processing customer returns (F_3) and cost of lost sales (F_4), are eliminated totally under a zero-defects approach. These costs are a function of the number of defective units discovered by customers. An increase in prevention and/or appraisal costs ensures that no defective units will be discovered by the customer. In addition, the reduction in the number of defective products produced can result in a decreased need to inspect for defects. Increased prevention expenditures (P), therefore, can result in reduced appraisal costs (A).

Total quality cost at a point where zero defects (all defects are discovered internally) are attained is given in the following formula and is shown in Exhibit 3.

$$T^z = P^z + A^z + F_1 + F_2 \qquad (3)$$

An important aspect of the zero-defects approach is that each component of total quality cost can be predicted with some degree of reliability. This is a clear advantage over the production-oriented approach under which one potentially large element, cost of lost sales (F_4), is ignored because it is not required for the income statement.

A comparison of the zero-defects approach to the production-oriented approach is shown in Exhibit 4.

SOCIETAL DIFFERENCES THAT INFLUENCE QUALITY CONTROL POLICIES

The difference between the production-oriented approach to quality control in America and the zero-defects approach to quality control in Japan can be attributed to several societal factors. Six major factors—measurement of corporate and management performance, economic conditions, raw materials, human resources, technology, and culture—are discussed.

Measurement of Corporate and Management Performance

The Japanese and the American societies differ in the way they measure corporate and management performance. Johnson and Kaplan[13] note that, for the most part, Americans tend to emphasize short-term profit measures, and Ishikawa[14] stresses that the Japanese emphasize longer-term measures.

[13] Ibid., 195.
[14] Kaoru Ishikawa, *What Is Total Quality Control? The Japanese Way*, trans. David J. Lu (Englewood Cliffs: Prentice-Hall, 1985), 33–34.

Exhibit 4. Comparison of Quality Costs under the Production-Oriented and Zero Defects Approach to Quality Control
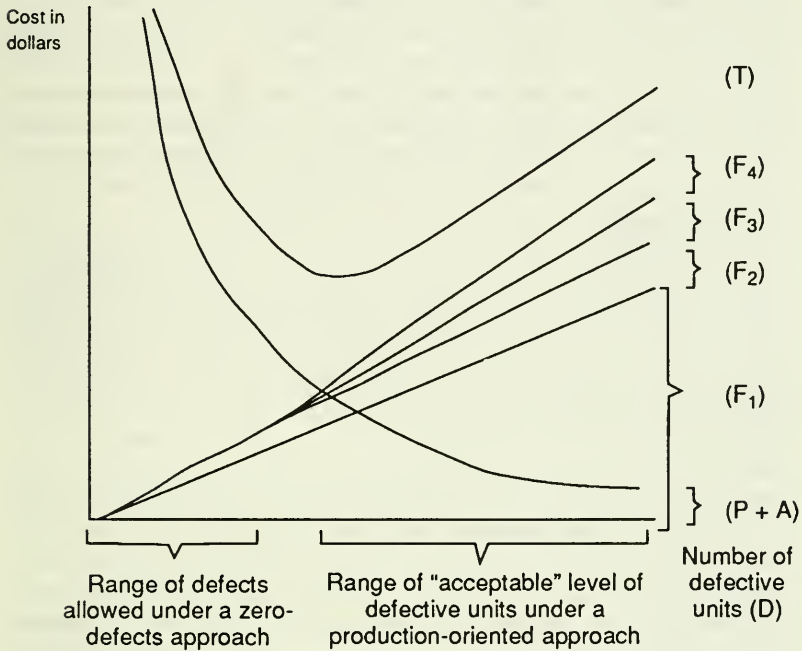
(T)   Total quality costs
(F$_4$)   Cost of lost sales
(F$_3$)   Customer return processing costs
(F$_2$)   Profit foregone
(F$_1$)   Rework costs
(P + A) Prevention and appraisal costs

The U.S. accounting system promotes the measurement of corporate success in terms of short-term profit. For example, many companies have a quarterly review process that encourages the recognition of profits as soon as possible. Also, companies registered with the Securities and Exchange Commission are required to submit quarterly reports to stockholders. The Japanese do not make the same short-term demands on corporate performance.

The length of the evaluation period also differs for measurement of management performance. In American society a change in management often leads to the expectation of immediate changes in financial measurements.

Ballon claims that in Japanese society, where lifetime employment and low turnover are present, long-term performance evaluation is the norm.[15]

Because of the tendency toward short-term corporate and management evaluation, American managers are not willing to make expenditures (primarily prevention oriented) that benefit future periods. As a result, research and development, education and training, and investment in technologically advanced machinery may not be popular expenditures in American companies because the benefits of these expenditures may not be realized for several years. As Exhibit 1 indicates, lower prevention costs (P) translate into more defective units thereby causing all elements of failure costs to increase.

Economic Conditions

The opening of global markets has resulted in increased availability of products for consumers. For example, automobile and electronic products from Japan have increased the number of brands that exist for a particular product. The consumer is faced with distinguishing between several brands that perform basically the same function. Quality often becomes the distinguishing factor among alternative products.

In an environment of an abundance of nondifferentiated products, consumers have little tolerance for poor quality products (after all, they could have purchased a higher quality brand). Therefore, a primary objective for managers would be to minimize the number of defective products that are discovered by customers. As indicated in Exhibit 1, increased expenditures in prevention (P) and appraisal (A) costs result in a decreased number of defective products discovered by customers. The decrease in defective products also results in a decrease in the cost of processing a return (F_3) and the cost of lost sales (F_4).

Raw Materials

The United States enjoys an abundance of raw materials and natural resources compared with those of Japan. Prior to the Arabian oil embargo, little thought was given to the conservation of resources in America. However, the Japanese always have imported the raw materials and natural resources that Americans traditionally have had in abundance. The need to optimize the use of precious resources has resulted in programs by Japanese management to eliminate waste during production.

Different conditions concerning raw materials and natural resources have led to different quality control policies. Emphasis on high rates of production with little concern for conservation of natural resources has led to a higher tol-

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[15] Robert J. Ballon, "Understanding Japanese Management Techniques," in Paul Norbury and Geoffrey Bownas, eds., *Business in Japan: A Guide to Japanese Business Practice and Procedure* (London: Macmillan Press Ltd., 1974), 88–110.

erance for rework costs (F1). The Japanese, on the other hand, have less toler-
ance for rework and scrap and, therefore, emphasize prevention costs (P).
These investments in prevention (P) reduce the number of defective units and
thus have a favorable effect on all elements of failure costs (see Exhibit 1).

Human Resources

Japanese and American societies differ significantly in human resources as
applied to quality control. These differences occur in the areas of
professionalism, labor unions, and education.

The American culture emphasizes professionalism, or at least a specializa-
tion, for a certain task. Ballon explains that the average Japanese worker is not
associated with a profession, occupation, or skill.[16] Instead, the Japanese
worker identifies with a work place. The American practice of task specializa-
tion is evident in the quality control function of corporations. In America
responsibility for quality control is given to a quality engineer or a quality cost
controller. In Japan responsibility for quality is disseminated to all employees.

In addition, American and Japanese societies differ in regard to labor
unions. American companies may use the labor of several unions, each orga-
nized according to a particular task (e.g., machinists, electricians, teamsters).
Ishikawa[17] describes Japanese labor unions as not organized by task. In other
words, the unions are enterprise wide rather than task specific. The benefit to
quality control is that it usually is endorsed by the company-wide union.

American and Japanese societies also differ in education. According to
Ishikawa,[18] the average Japanese factory worker is better educated than the
American worker in terms of operations and statistics. Quality control is
taught in the Japanese school system whereas it is learned on the job in
America. Therefore, a major prevention cost, quality control training, is
subsidized by the educational system in Japan. The result is a significant
reduction to the firm in prevention costs for basic educational and training
programs.

Differences in human resources can have a profound effect on quality
costs. For example, expenditures are not needed in Japan for the purpose of
creating and maintaining a separate department for quality control. This
results in less need for prevention expenditures. Also, the company-wide
attitude toward quality control and the education of the typical Japanese
worker have a favorable effect on failure costs.

Technology

Technological changes eventually lead to changes in the work force.
Existing employment status often is threatened when increased skill is

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[16] Ibid.

[17] Ishikawa, *What Is Total Quality Control?* 24–25.

[18] Ibid., 28.

required to operate the new technology, or jobs are eliminated because of automation. This threat makes the introduction of new technology unpopular with American workers when labor unions control labor relations and lifetime employment is not expected.

Abegglen suggests that in Japan, where employment is viewed as permanent, the introduction of new technology poses no threat.[19] In fact, the increased efficiency or competitive advantage created by the introduction of new technology may even result in more rapid advancement or a bonus.

The development of new machines that produce fewer defects represents prevention expenditures that, as shown in Exhibit 1, may significantly reduce failure costs. Technology, which can detect or inspect products previously inspected by the human eye, may result in new employment requirements; however, this appraisal expenditure may significantly reduce external failure costs.

Culture

American and Japanese cultures differ in language, heritage, and religion. Hayashi and Ishikawa suggest that these factors contribute to differences in quality control policies.[20] For example, the complexity of the Japanese language forces the Japanese to master complex learning techniques at an early age. In addition, because America is a country composed of different national origins and languages, implementation of quality control is more difficult. The Japanese culture is more homogeneous, which makes implementation of quality control programs easier. Ishikawa even mentions differences between Confucianism and Christianity as possible reasons for differences in quality control policies.[21]

These topics are highly controversial. In fact, Ishikawa's translator, Lu, specifically disassociates himself from opinions expressed by the author.[22] More efficient implementation of quality control programs by the Japanese is difficult to dispute. American companies must join Japanese companies in making additional expenditures in prevention and appraisal (for quality implementation purposes) to receive results comparable to those from similar programs in Japan.

IMPLICATIONS OF EMERGING SOCIETAL FACTORS ON QUALITY CONTROL POLICIES

Several societal factors that have influenced the adoption of distinctively different quality control policies by American and Japanese industries have

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[19] James C. Abegglen, "Employee and Industrial Relations," in Norbury and Bownas, *Business in Japan,* 111–33.

[20] Yujiro Hayashi, "Industrial Policies in Japan," in Norbury and Bownas, *Business in Japan,* 18–31; and Ishikawa, *What Is Total Quality Control?* 29.

[21] Ishikawa, *What Is Total Quality Control?* 29.

[22] Ibid., viii.

been identified in this paper. The significance to a firm of the choice of a quality control policy is that the policy can have a major impact on the firm's product quality, competitive strategy, market share, employee relations, capital expenditures, and strategic planning.

Just as past societal factors have had their impact, emerging societal factors no doubt will have their effects on quality control policies. For example, new technology may allow manufacturers to obtain more benefits per dollar spent on prevention and appraisal devices. In addition, increased worldwide competition may force manufacturers to be even more mindful of the wide variety of products on the market. High quality may be the most significant factor that differentiates one product from another. Production-oriented quality control policies, which tolerate an acceptable number of defective units, could become obsolete under these circumstances. Increased demand by management for more accurate and timely information for managerial decision making may cause a zero defects policy to be a requirement.

As companies become aware of societal factors important to their operations, they will need to give serious consideration to their choice of quality cost policy. Management's evaluation process should include measurement of a policy's benefits against the quality cost components and their relationships as depicted in the suggested quality cost model.

Although the decision-making process could be strengthened by using the quality cost model, the model first should be adapted to a specific application and tested empirically. However, cost measurement constraints make this a problematical process. First, some of the individual quality cost components are difficult to estimate. For example, the dilemma in estimating the cost of lost sales is that some companies are unaware of who their customers are and, if they do know, may still not know whether lost sales are a function of quality problems. Even if lost customers could be identified, the present value of future lost sales would be difficult to predict.

Another reason adapting the cost model and and testing it empirically may be difficult is that the typical accounting information system does not contain a cost system that tracks quality-related costs. In addition, the system may not collect the necessary statistics, for example, the effects on the number of defective units before and after changes in expenditures for quality improvement (prevention and appraisal). Notwithstanding, because both past and emerging societal factors cause management to regard quality control policies as critical success factors, the quality cost inputs and outputs will need to recognized in the cost system, and methods will have to be developed for their estimation and prediction.

Existence of and Needs for Informal Accounting Information Systems: A Case Study of New Zealand Companies

MOHAN LAL AND BRONWYN DONALDSON*

Mintzberg[1] contends that the designers of the formal management information system, such as accountants and other information specialists, are concerned that managers do not use information as the designers believe they should and would like to know why. Because empirical evidence on this issue is limited, Mintzberg suggests that "explanations be derived from empirical research, especially from systematic studies of how managers use information."

The purpose of the current study was to respond to this need to conduct empirical research to determine why managers do not use the information provided by the formal system. The study sought to provide further empirical evidence on how managers are informed. Both formal and informal accounting information systems[2] were studied. Following Clancy and Collins,[3] the *formal accounting system* is defined

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[1] Mintzberg, *Impediments to the Use of Management Information* (Hamilton, Ont.: National Association of Accountants and Society of Management Accountants of Canada, 1974).

[2] Both formal and informal accounting information system(s) will be referred to as formal and informal system(s).

[3] Donald K. Clancy and Frank Collins, "Informal Accounting Information Systems: Some Tentative Findings,"*Accounting, Organizations and Society*, vol. 4, no. 4 (1979), 21–30.

as a legitimized subset of a larger formal organization system; the *informal accounting information system* is defined as a nonlegitimized set of records maintained by the person who directly uses the data.[4] This study examined the existence of the informal system and its relationship to the formal system. The relationship is important because the informal system may process information that is vital to the organizational functioning but without formal records of that process.[5]

PRIOR RESEARCH

Previous research has identified the imperfections and limitations of formal information systems.[6] Simon et al.[7] found that most operating executives in the companies studied kept unofficial (informal) quantitative and qualitative records. These authors suggest that informal records were maintained because the formal information system did not provide the desired information.

Hopwood's study of cost center heads also found the existence of informal information systems.[8] He found that cost center heads designed independent systems that were more useful in content and format for decision making. Hopwood states, "They designed and operated independent information systems which provided timely and parsimonious information relevant to their own personal needs."[9]

The fact that informal systems exist in organizations is accepted; the question becomes why managers favor informal over formal ones. Mintzberg identified four basic weaknesses in the formal information system.

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[4] Although using different terms, various authors argue that the complete information processing system of an organization consists of both a formal system and an informal system. See R.E. Myers, *The Behavioral Aspects of Accounting Data for Performance Evaluations at Spectra-Physics, Inc.* (Columbus: Ohio State University, 1970); John Galbraith, *Designing Complex Organizations* (Reading, Mass.: Addison Wesley, 1973); Anthony Hopwood, On Trying to Study Accounting in the Contexts in Which It Operates," *Accounting, Organizations and Society*, vol. 8. no. 2/3 (1983), 287–305; and Gordon B. Davis and M.H. Olson, *Management Information System* (New York: McGraw-Hill, 1985).

[5] Davis and Olson, *Management Information System*.

[6] Herbert A. Simon, H. Guetzkow, G. Kozmetsky, and G. Tyndall, *Centralization vs. Decentralization in Organizing the Controller's Department* (Houston: Controllership Foundation, 1954; Galbraith, *Designing Complex Organizations*; Hopwood, *On Trying to Study Accounting*; and Mintzberg, *Impediments to the Use of Management Information*.

[7] Simon et al., *Centralization vs. Decentralization*.

[8] Anthony Hopwood, *An Accounting System and Managerial Behavior* (Farnborough, England: Lexington Books, 1973).

[9] Ibid., 123.

1. The formal information system may be too limited. It may not be sufficiently rich, often ignores important noneconomic and nonquantitative data, and is often weak in the area of external data.

2. The formal system may aggregate data with the result that information provided is often too general for managers to use.

3. The data provided by the formal system may be too late.

4. The data may be considered to be unreliable. Important aspects of the data may be lost while they are quantified.[10]

Based on the variables identified in their earlier study,[11] Clancy and Collins recently found that a high percentage (79 percent) of the respondents to their questionnaire maintained informal systems. Clancy and Collins also found that both formal and informal systems were viewed positively by the respondents. They concluded that ". . . the informal accounting system should be considered a useful and necessary adjunct to the formal system rather than an unnecessary dissipation of resources."[12] They hypothesized that "an informal system supplements rather than replaces a formal system" and called for further research in this area:

If the conclusions are subsequently supported, then the direction of systems design and improvement should be changed. No longer would the elimination of informal systems be an important objective. Rather, improving compatibility between formal and informal systems should be stressed. Yet, before this change in direction is justified, more research of greater situational specificity is needed.[13]

RESEARCH METHODOLOGY

To a limited degree, the present study used the basic research framework developed by Clancy and Collins. Their questionnaire was adapted and was used to collect data on the existence and nature of the informal accounting information systems, the reasons for their development, and the attitudes of managers toward the formal system.

The data were collected from two large manufacturing companies in Dunedin, New Zealand, through semistructured interviews with sixteen middle and lower level managers. At the request of the companies neither their names nor the nature of their manufacturing businesses are disclosed. To disguise their identities the interviewees are simply referred to as managers A to P. A semistructured interview procedure was used to allow the interviewee freedom to respond as fully as possible without the constraint of prearranged questions, thus providing

[10] Mintzberg, *Impediments to the Use of Management Information.*

[11] Clancy and Collins, *Informal Accounting Information Systems.*

[12] Ibid., 29.

[13] Ibid, 29–30.

more in-depth information. However, to keep the responses within the confines of this study's objectives, a list of topical questions was used as a guide.

The interview was conducted in the interviewee's own environment and began in all cases by the interviewee being asked to describe the interaction he or she had with the "formal" system. Questions were of these forms: "Can you tell me about the input you have to the (formal) accounting system?" "Can you describe what output you receive from the accounting system?" and "How much do you use this output?" This part of the interview was used to determine how much interaction the interviewee had with the "formal" system. When the area of the interaction with it appeared to be exhausted, the topic of the informal system was introduced. Questions then followed on the informal information records that the managers kept for their own use, why they keep these records, and in what form they kept them.

At the conclusion of the interviews, those managers who regularly received output from the formal system were asked to evaluate it by completing a questionnaire. Questionnaires were sent to seven managers. Six completed questionnaires were returned and used in this study. The purpose of the questionnaire was to supplement the interview data. The managers were asked to evaluate only the formal systems because the informal systems were found during the interviews to be primarily unstructured and therefore would have been difficult for the managers to evaluate.

RESEARCH QUESTIONS

The data obtained from semistructured interviews and the formal system questionnaires were analyzed in the context of the following research questions:

1. Do informal systems exist within the selected companies?
2. What is the nature of such systems? (This question refers to the format used to record data, whether or not the system is structured, and how often the informal information system was used.
3. How do managers view the formal and informal systems? (The aim was to determine whether these systems are viewed positively or negatively by the managers and to inquire into the diversity of opinions with regard to each.
4. Does the informal system supplement/complement or replace the formal system?
5. Why do informal systems develop?

FINDINGS AND ANALYSIS

Existence and Nature of Informal Accounting Information Systems

Informal systems were found to exist in the two companies that formed the sample of this study. Of the managers interviewed, 56 percent acknowledged maintaining some form of informal system. The majority of the managers used *unstructured* systems. Only three cases of reasonably *structured* systems were found. A comment by one manager sums up the situation: "Nothing fancy, you understand . . . in fact, very crude format."

These results are to some extent consistent with Simon et al.,[14] who found differences in the frequency of informal record use and with Hopwood, who found, in addition, variability in the degree of use of informal systems.[15]

Relationships of Formal and Informal Accounting Information Systems

The summary data of the relationship of formal and informal systems is presented in Exhibit 1. The results support the conclusions of Hopwood and of Clancy and Collins.[16] In the majority of cases, informal systems were found to *complement/supplement* rather than *replace* the formal systems. It should be noted, however, that this study found

Exhibit 1. Relationship of Informal Information Systems to Formal Information Systems

Manager	Informal System	Relationship
D	Labor charges	Complements/Supplements
D	Union problems	Complements/Supplements
F	Efficiency (1)	Complements/Supplements
G	Order book	Replaces
G	Order ledger	Replaces
H	Operations problems	Complements/Supplements
I	Efficiency (2)	Duplicates
K	Machine breakdowns	Complements/Supplements
L	Project costs	Duplicates
M	Customers	Complements/Supplements
M	Production	Complements/Supplements
M	Responsible for costs	Duplicates
N	Explanatory	Complements/Supplements
N	Check accuracy	Complements/Supplements

[14] Simon et al., *Centralization vs. Decentralization.*

[15] Hopwood, *Accounting System and Managerial Behavior.*

[16] Ibid., and Clancy and Collins, *Informal Accounting Information Systems.*

three cases in which informal systems could be construed as replacing particular parts of the formal systems.

Manager G keeps two informal systems: an "overseas buying ledger" and an "index of orders." He uses them to answer queries on outstanding orders: "If I get a query and they don't know the order number, I can look up the index to get the data on transactions. I also keep an overseas buying ledger. . . . This is used to answer queries on overseas orders."

Causes of the Development of Informal Accounting Information Systems

A wide variety of reasons was given by the managers as a justification for maintaining the informal system (see Exhibit 2). The following discussion provides more insight and a comparison with the findings of prior research on this issue. Simon et al. found that the informal systems existed in organizations because managers find the formal reports to be unreliable.[17] None of the managers in this study cited this as a reason for keeping their informal system. Clancy and Collins advanced a number of propositions as the reason for the development of informal systems; among them are the following:

1. The managers' need for a defense mechanism in their performance evaluation involving formal system data ("covering tracks");
2. The failure of the formal system to measure the manager's personalized goals.

Exhibit 2. Summary of Causes of Informal Information Systems

Cause	Number of cases
Defense mechanism	1
Help manage their job better	2
Formal system too awkward to use	2
Responsible for cost (need to record—report not produced by formal information system)	2
Explanatory purposes	1
Check accuracy of formal information	1
Help prepare report	1
Provide justification for capital expenditure	1
Keep check on efficiency of department	2
Need to do something if problems recur	1
Remember important information	1

Note: The number of reasons given for having informal information systems is greater than the number of managers because some managers keep more than one informal system. One manager provided two reasons for keeping the same informal system.

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[17] Simon et al., *Centralization vs. Decentralization.*

3. The help in remembering important operational information.[18]

Some support for these propositions was found in this study. For example, Manager M kept a record of actual and budgeted production (in quantities). When costs of production were higher than the amount budgeted and if the production department did not produce the required quantities, Manager M would use the information to shift the burden of extra costs to the production manager. The inference was that Manager M uses the informal system as a defense mechanism. Manager H indicated the reason why he records data in a diary: "I keep notes in my diary on operator and machine movements, use it to jog my memory. I also note anything important that happened on a certain day, for example the day a machine broke down."

The informal system helps Manager H to remember important operational information.

Manager K reasoned: "When it comes to replacing machinery, I keep a record of number of breakdowns, and the reasons for such breakdowns, just for major machines. I use this to build up a data base . . . useful as a backup when putting in a request for capital expenditure."

During the interview it became apparent that Manager K's goal was to obtain newer machines for his department and to keep his operational costs lower than they had been.

Manager M is in a similar position but uses his system quite extensively:

I am building up a data base to be used for sales analysis. Also, I use the information—for example, for each salesman the number of calls they are making and the number of dollars of sales for each call and use it to work out trends, like whether we have a growing or declining market share . . . I also use the customer information to write a detailed monthly report on sales . . . . I prepare a production requirement report to see if what was wanted has been produced. That way it is their [production department's] fault if the cost is too high. I also keep progressive sales reports, write down each invoice value as it goes out to the customer. It gives me an idea of how the month is going. I also keep records on anything I am answerable for. For example, freight negotiations; also, invoices the division receives relating to advertising.

Attitude toward the Formal Accounting Information Systems

During the interview, managers who were in a position to evaluate the formal systems did so very positively. In Company 1, comments such as that provided by Manager A were indicative of the attitudes toward the formal system: "very good . . . provides all the financial information I need . . . ."

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[18] Clancy and Collins, *Informal Accounting Information Systems*, 24.

Positive attitudes toward the formal system were also evident in Company 2. However, several negative comments concerned excessive detail, total volume, and lack of timeliness (see Exhibit 3). A five-point Likert scale with a score of 5 representing a positive attitude toward the system was used to evaluate the questionnaire responses. The results of that evaluation indicate that all respondents viewed the formal system fairly positively. However, some of the comments accompanying the questionnaires were critical of the company's system. The main complaint was that information provided was untimely and far too detailed to be of use to them. Manager M commented: "Reports received fourteen or fifteen days after the close of the month were of little value. . . .We can all be very wise about the past. . . ."

CONCLUSIONS

This study was to determine the existence of informal systems and, if they exist, what their nature in actual organizations is, and why these systems exist. A case study using both interviews and a questionnaire was conducted to collect data from two manufacturing companies.

Informal systems were found to exist mainly in an unstructured form. In the majority of cases, such systems supplemented/complemented the

Exhibit 3. Summary of Responses to the Questionnaire

Question number	Subjects					
	1	2	3	4	5	6
1	4	4	5	5	4	5
2	4	2	5	5	5	4
3	4	3	4	3	2	3
4	3	3	4	5	4	3
5	4	4	4	4	4	3
6	3	3	4	4	3	4
7*	2	2	3	4	4	4
8	3	4	5	2	4	4
9*	4	3	3	2	5	5
10	4	4	4	3	4	4
11	4	5	4	3	3	3
12	3	2	3	3	4	1
13	4	3	4	3	4	2
14	3	3	3	2	2	2
Average	3.5	3.29	3.93	3.43	3.71	3.36

*Worded so that a 5 on the Likert scale would reflect a negative attitude to the formal system. Therefore, in each case, the responses to these questions were adjusted so that all answers would reflect a positive attitude for scores above 3. See C.W. Emory, *Business Research Methods* (Homewood, Ill.: Irving, 1989).

formal systems. Although the attitudes of the managers toward the formal systems were found to be positive, negative comments were made in one company about the copious amount and untimeliness of the data provided by the formal system.

These findings are consistent with the results noted in Simon et al., Hopwood, and Clancy and Collins.[19] The importance of the findings lies in the implications for the future design of information systems—in particular, accounting information systems. Because the informal systems in this study were mostly unstructured, infrequently referred to, and caused by a wide variety of reasons, it may be impractical to incorporate them into formal systems. The findings suggest that informal systems serve many useful purposes and that any attempt to eliminate them may prove to be counter productive. Instead, it is suggested that designers of formal systems recognize the existence and value of informal systems.

[19] Simon et al., *Centralization vs. Decentralization*; Hopwood, *Accounting System and Managerial Behavior*; and Clancy and Collins, *Informal Accounting Information Systems*.

Multinational Transfer-Pricing Factors: Tax, Custom Duties, Antitrust/Dumping Legislation, Inflation, Interest, Competition, Profit/Dividend, and Financial Reporting

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INTRODUCTION AND LITERATURE REVIEW

The impact of environmental variables of multinational transfer pricing (EVMTP) on complex organizations continues to be a source of frequent managerial concern and frustration. One of the major sources of frustration in studying EVMTP is the multiplicity of associated variables and the inherent data redundancies. Some of the EVMTP variables focus on practices of U.S. multinational firms. For instance, Shulman explains how transfer prices can be used to overcome inflationary tendencies, to strengthen the competitive position of foreign subsidiaries, and to achieve other objective credits.[1] Greene and Duerr focus on the influence of tax effects, customs considerations, and the desires of domestic divisional executives and local managers abroad upon corporate, multinational transfer-pricing policies.[2] Lall discusses the limits and inducements of using transfer pricing in a multinational context.[3] Stewart discusses variables influencing a multinational company's financial behavior with particular emphasis on transfer pricing.[4] In contrast, few empirical studies concerning U.K. companies have been conducted. In 1973 the Centre of Business Research in association with the Manchester Business School sponsored a study in which eighteen

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[1] J. Shulman,"When the Price is Wrong—By Design," *Columbia Journal of World Business* (May-June 1967), 69-76.

[2] J. Greene and M.G. Duerr, *Intercompany Transactions in the Multinational Firm* (New York: The Conference Board, 1970).

[3] S. Lall, "Transfer Pricing by Multinational Manufacturing Firms," *Oxford Bulletin of Economics and Statistics* (August 1973), 173-93.

[4] J.C. Stewart, "Multinational Companies and Transfer Pricing," *Journal of Business Finance and Accounting* (Autumn 1977), 353-71.

of the forty-four respondent firms reported having a significant amount of intracompany transfers crossing international boundaries. The main reasons for the transfers were to comply with tax laws, customs requirements, transport costs, and profitability of both parties to transfers.[5] In another questionnaire survey conducted by the Institute of Cost and Management Accountants and reported in Finnie, some respondents stressed the use of arms-length prices for international transfers. Tang has contributed greatly to the theory of EVMTP. In particular, he conducted a correlation analysis focusing on the relationship among EVMTP variables (Appendix A). Based on this correlation analysis, potential multicollinearity, and skewed distributions, Tang made the following assertion and comments:

Since factor analysis is concerned with relation among observations, it commonly starts with a matrix of correlations as its input. The correlation matrix of environmental variables shows that some variables are highly correlated. For example, variable 3 (Antitrust Legislation) and variable 4 (Antidumping Legislation) had a correlation coefficient of .76, while variable 5 (Rate of Inflation) and variable 8 (Devaluation and Revaluation) had a correlation of .52.

Although the point at which multicollinearity becomes "harmful" has not been statistically determined, it can certainly be harmful at some point.[6] Because the harm of the present level of multicollinearity is unknown, it would be more advantageous to be statistically conservative by trying to minimize the level of multicollinearity. Likewise, dealing with normally distributed variables is preferred to working with skewed variables. Thus, reducing multicollinearity and normalizing the distribution of the factors score should improve the overall statistical reliability of the EVMTP model. Accordingly, reducing the multicollinearity of this model and normalizing the distribution of its factors is one of the stated objectives of the present study.

PROBLEMS

The problems that emerge from the related literature are rather complicated. One major problem that theorists have discussed extensively in the literature is the multiplicity of EVMTP variables and their importance relative to each other. Dealing with so many variables is conceptually cumbersome. Moreover, this multiplicity of variables significantly raises the costs associated with the model design, data collection, and data processing, to the detriment of the overall cost/benefit analysis. These increased costs may also be detrimental to the use of the EVMTP model. The

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[5] J. Finnie, "Transfer Pricing Practices," *Management Accounting* (December 1978), 494-97.
[6] D. Farrar and R. Glauber, "Multicollinearity in Regression Analysis: The Problem Revisited," *Review of Economics and Statistics* (1967), 92-107; and J. Kmenta, *Elements of Econometrics* (New York: Macmillan, 1971).

absence of an empirically tested rank order among these variables is another part of this problem. Such ranking is particularly important for an EVMTP model that expresses the most subordinant and most dependent variable as a mathematical function of the remaining more dominant and more independent variables.

The second problem is multicollinearity, which is associated with the multiplicity of EVMTP variables. The problem related to multicollinearity is the redundancy among the EVMTP variables and their informational content. This is especially important whenever the model variables are expected to be independent of each other and contain no redundant information. Violating such assumptions will reduce the reliability of multivariate models that assume independence of variables.[7]

The third problem is the skewed distribution of the EVMTP variables, which leads to a potentially biased EVMTP model. This is especially relevant for multivariate methods using ordinary least squares (OLS) regression or multiple discriminant analysis (MDA). Such OLS or MDA could be more effective if the EVMTP would have a symmetrical normal distribution.

OBJECTIVES

The objectives of this study are three-fold. The first is to reduce the multiplicity of EVMTP variables. Thus, the initial twenty variables, which are somewhat redundant, will be replaced by fewer, nonredundant factors, which will constitute the modified EVMTP model. The second objective is to reduce the level of multicollinearity of the EVMTP factors. The third objective is to normalize the factor scores' distributions for the modified EVMTP model. In sum, the objectives of this study involve ranking the variables; reducing the number of factors, their data redundancy, and multicollinearity; and normalizing their distributions for the modified EVMTP model.

METHODS AND PROCEDURES

Orthogonal (uncorrelated) factor analysis is a statistical technique used to extract a set of common factors with minimized multicollinearity from a set of variable scores. The methodology of principal component factor analysis has been chosen because it can accomplish all of the objectives: reducing the data, ranking the variables, and defining factors with minimized multicollinearity as well as normal distributions.[8] Assumptions

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[7] Ibid.

[8] L. Guttman, "Some Necessary Conditions for Common-Factor Analysis," *Psychometrika*, vol. 19 (1954), 149-69, and "A General Nonmetric Technique for Finding the Smallest Coordinate Space for Configuration of Points,"*Psychometrika*, Vol. 33 (1968), 469-506; J.W. Holley and J.P. Guilford, "A Note on the G Index of Agreement," *Educational and Psychological Measurement*, Vol . 24 (1964), 749-753; and R.F. Cattell, "Factor Analysis: An Introduction to the Essentials." (I) The Purpose and Underlying Models, (II) The Role of Factor Analysis in Research, *Biometrics*, Vol. 21 (1965), 190-215, 405-35.

concerning data structures inherent in factor analysis are similar to those in a correlation analysis.[9] Thus, assuming that Tang has met the required assumptions for their correlation analysis, one can perform a factor analysis without violating those assumptions.

Although the number of orthogonal factors is unknown, prior to the factor analysis, the correlation matrix reveals that the number of factors will be fewer than the twenty original EVMTP variables. The mathematical formulation of factor analysis with the orthogonal rotation of the axes ensures that the multicollinearity will be minimized. In addition, the application of factor score coefficients secures normally distributed factor scores with a mean score of 0 and a standard deviation of 1.00.[10]

THE HYPOTHESES

The hypotheses of this study can be stated as a null hypothesis and its related alternative hypothesis. Thus, the null hypothesis states that data reduction is impossible without a significant loss of information and unless multicollinearity is nonexistent. Thus, the number of the orthogonal factors will be equal to the number of original EVMTP variables (twenty). On the other hand, the alternative hypothesis states that the EVMTP variables are somewhat redundant and therefore can be replaced by fewer less redundant factors, without a significant loss of information. These hypotheses are formally stated as follows:

Null Hypothesis—H(0); a(i,j) are less than .3 for the EVMTP sample.
Alternative Hypothesis—(H1); a(ij) are equal to or greater than .3 for this sample, for $i = 1...n = 20$, and $j = 1...m < 20$
where:

i   = index for the number of variables,
j   = index for the number of factors,
n   = number of EVMTP variables,
m   = number of EVMTP factors, and
a(i,j) = orthogonal EVMTP factor loading coefficients.

If the null hypothesis is rejected in favor of the alternative hypothesis, the Tang model can be restated in terms of orthogonal EVMTP factor with normally distributed scores instead of the original correlated and skewed variables scores.[11] Consequently, the model will become less redundant as well as less biased and, therefore, more efficient as well as more reliable.

[9] H.E. Daniels, "The Relation between Measures of Correlation in the Universe of Sample Permutations," *Biometrika*, Vol. 33 (1944), 129-35.

[10] S. Levy and L. Guttman, "On the Multivariate Structure of Well-Being," *Social Indicators Research* (1975), 361-68.

[11] Ibid., and L. Goodman and W. Kruskal, "Measures of Association for Cross Classifications I," *Journal of the American Statistical Association* (December 1954), 732-64.

SAMPLE SELECTION AND DATA COLLECTION

Tang utilizes a questionnaire survey as the center of his research. A list of twenty environment variables composed one section of the survey questionnaire. The variables selected were chosen after a thorough review of existing literature was conducted.[12] Among the 500 largest U.K. companies in *The Times 1000 Directory*,[13] 290 manufacturing and mining firms were sent copies of the questionnaire. These companies were chosen due to the greater amount of relevance of transfer pricing to them than to others.[14]

These firms checked the degree of importance of each of the twenty variables in regard to multinational transfer pricing policies. A five-point scale was used as follows: extremely important (5), very important (4), moderately important (3), not too important (2), not at all important (1). By April 1979, eighty firms had responded. Of the eighty, 79 percent (sixty-three firms) utilized at least one transfer pricing method. "Sixteen of the seventeen companies that did not use transfer prices reported that their interdivisional transfers were insignificant."[15] One firm complained of complications of operation as the reason for nonutilization. Forty-seven of the sixty-three companies answered the questions on environmental variables. The following variables, which are also factors in the EVMTP model, were defined, collected, and recorded by Tang:

1. Differentials in income tax rate and income tax legislation (DTR),

2. Rate of customs duties and customs legislation where the company has operations (CDL),

3. Antitrust legislation of foreign countries (ALF),

4. Antidumping legislation of foreign countries (ADL),

5. Rates of inflation in foreign countries (IFC),

6. Risk of expropriation in foreign countries where the company has operations (REX),

7. The interests of local partners in foreign subsidiaries (LPF),

8. Devaluation and revaluation in countries where the company has operations,

9. Maintaining good relationship with the host government (RHG),

10. The competitive position of subsidiaries in foreign countries (PSF),

11. Overall profit to the company (OPC),

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[12] R.Y.W. Tang, "An Empirical Investigation of the Transfer Pricing Practices of Large Industrial Corporations in the United States and Japan," Doctoral Dissertation, University of Nebraska (1977).

[13] *The Times 1,000 Directory, 1976-77* (London: Times Newspaper, 1976).

[14] W.E. Stone, "Management Practices with Respect to Internal Pricing in Large Manufacturing Companies," Doctoral dissertation, The University of Pennsylvania (1957).

[15] R.Y.W. Tang, "Environmental Variables of Multinational Transfer Pricing: A U.K. Perspective," *Journal of Business Finance and Accounting* (September 1982), 179-89.

12. Restrictions imposed by foreign countries on repatriation of profits or dividends (RPD),

13. Import restrictions imposed by foreign countries (IRF),

14. The need of subsidiaries in foreign countries to seek local funds (NSL),

15. Performance evaluation of foreign subsidiaries (PEF),

16. Rules and requirements of financial reporting for foreign subsidiaries (RFR),

17. Volume of interdivisional transfers (VIT),

18. Domestic government requirements on direct foreign investments (DRF),

19. Restrictions imposed by foreign countries on the amount of royalty or management fees that can be charged against foreign subsidiaries (RRF), and

20. The need to maintain adequate cash flows in foreign subsidiaries (MCF).

For further information concerning the data description, the reader should refer to Tang.[16]

RESULTS AND DISCUSSION

The exploration of dominance is achieved by constructing a new set of dominant factors. Exhibit 1 presents the new set of factors as described by a factor matrix, using the principal factor methodology with iterations. Because the principal component method had been applied, these new factors are exact mathematical transformations of the original data. This method is preferred because no particular assumptions are made as to the structure of the variables.[17] The initial solution of the principal component factor analysis is presented in Exhibit 1. As expected from the literature, the substantial dominance of six factors over the original twenty EVMTP variables exists. For interpret these factors to be interpreted in the most meaningful way, the factor matrix must be orthogonally rotated. This orthogonal (uncorrelated) rotation will lead to the terminal solution of this factor analysis.

The initial solution, in Exhibit 1, extracted the orthogonal unrotated factors in the order of their eigenvalues, which depict their dominance in relation to each other. These factors tend to be general and/or bipolar; therefore, it is difficult to interpret them at the initial solution stage. Moreover, many EVMTP variables tend to load significantly on more than one factor (complex loadings), which inhibits a clear interpretation of the factors.

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[16] Ibid.

[17] H.N. Nie, C.H. Hull, F. Jenkins, K. Steinbrenner, and D.H. Bentl, *Statistical Package for the Social Sciences* (New York: McGraw-Hill, 1975), 468-514.

Exhibit 1. EVMTP Factor Matrix Using Principal Factor with Iterations(1)

		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1.	DTR	.43145	.00419	−.25138	.12606	−.14385	.01659
2.	CDL	.62219	.33368	−.16121	−.11295	.00219	−.03423
3.	ALF	.52021	.44229	.37490	−.13554	−.24198	−.04432
4.	ADL	.56944	.52159	.28163	−.26&68	−.37633	−.16743
5.	IFC	.55952	.20981	.08809	.60089	.11229	.00404
6.	REX	.51949	−.20519	.27282	.08889	.09881	−.36836
7.	LPF	.31531	−.23174	−.13177	−.05570	−.03870	.31589
8.	DRO	.32676	−.18307	.17716	.46190	.08975	.14514
9.	RHG	−.02164	−.43168	.70650	.15372	−.11873	.09596
10.	PSF	.53983	.22858	−.16457	−.13782	.09820	−.13056
11.	OPC	.35389	.07751	−.21700	.12702	.17355	−.03855
12.	RPD	.71351	−.17342	−.05508	.22011	.10853	−.02061
13.	IRF	.57015	−.43206	−.07324	−.00458	.09575	−.19790
14.	NSL	.70980	−.31387	−.12074	−.11699	.06456	−.01433
15.	PEF	.10429	.22309	.34187	−.45682	.66420	.14593
16.	RFR	.07480	.05287	.46408	.09727	.09963	.19113
17.	VIT	.40763	.46453	−.18820	.06776	−.00533	.40344
18.	DRF	.59488	−.37171	.09681	−.22716	−.05496	.04922
19.	RRF	.56355	−.42937	−.02412	−.20954	−.26475	.34303
20.	MCF	.51069	−.10740	−.08612	−.09598	.16074	−.03607

Coefficients greater than the absolute value of .3 are statistically significant. See R.J. Rummel, "Understanding Factor Analysis," *Conflict Resolution*, vol. 11 (1967), 444–80.

These variables have been defined by Tang.

Factor 1 is a general factor that loads high on most variables. This may be simplified by axes rotation.

Factor 2 tends to be bipolar, having both positive as well as negative coefficients. This may also be simplified by a rotation of the axes.

Thus, naming and interpreting the factors are reserved for the terminal orthogonally rotated solution, which should be less bipolar and simpler.

Exhibit 2 presents the EVMTP variables, communalities, factors, eigenvalues, percentage of variance (PCT OF VAR) explained, and the cumulative percent of variance. The 100 percent of explained variance supports the notion that the original twenty EVMTP variables can be expressed in terms of the two new factors, 1 and 2. Thus, it appears that substantial dominance exists, indicating significant potential for the reduction of data redundancy in the factors and their multicollinearity.

The terminal solution is presented in Exhibit 3 as the Varimax Rotated Factor Matrix. This orthogonal rotation maximizes the difference between each pair of factor loadings. This rotation will also reduce the complexity and the bipolarity of the factor.[18] The values of the factor loading coeffi-

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[18] C.R. Rao, "Estimation and Test of Significance in Factor Analysis," *Psychometrika*, (1955), 93–111.

Exhibit 2. EVMPT Variable Communalities and Factors' Eigenvalues

Variable		Commu-nality	Factor	Eigen-value	Pct of var	Cum pct
1.	DTR	.28622	1	4.82731	44.3	44.3
2.	CDL	.53839	2	1.91466	17.6	61.9
3.	ALF	.68568	3	1.42135	13.0	74.9
4.	ADL	.91747	4	1.15301	10.6	85.5
5.	IFC	.73854	5	.88184	8.1	93.6
6.	REX	.53980	6	.69859	6.4	100.0
7.	LPF	.27487				
8.	DRO	.41414				
9.	RHG	.73289				
10.	PSF	.41644				
11.	OPC	.22608				
12.	RPD	.60286				
13.	IRF	.56546				
14.	NSL	.63477				
15.	PEF	.84972				
16.	RFR	.27968				
17.	VIT	.58475				
18.	DRF	.55847				
19.	RRF	.73421				
20.	MCF	.31611				

The communality indicates the relative variable dominance; thus, NEG is the most dominant among the EVMTP variables

The eigenvalue and the percentage of variance (PCT OF VAR) explained indicate the relative dominance of each EVMTP factor; thus, Factor 1 is the most dominant factor.

The 100 percent cumulative percentage (CUM PCT) of explained variance indicates that 100 percent of the information contained in the original twenty EVMTP variables has been transferred into the two new EVMTP factors.

cients indicate the statistical significance of a variable contribution to each factor. Thus, the EVMTP variables, with statistically significant factor loadings (those that are greater than .3), are used to name and interpret the new EVMTP factors. The following name and interpretations have been assigned to the factors:

1. Factor 1—Import restrictions imposed by foreign countries and risk of expropriation in foreign countries where the company has operations (IRF & REX).
2. Factor 2—Antidumping legislation of foreign countries and antitrust legislation of foreign countries (ADL & ALF).
3. Factor 3—Restrictions imposed by foreign countries on the amount of royalty or management fees that can be charged against foreign subsidiaries and the interests of local partners in foreign subsidiaries (RRF & LPF).
4. Factor 4—Rates of inflation in foreign countries and devaluation and

Exhibit 3. EVMTP Rotated Factor Matrix: A Terminal Solution

Variable		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1.	DTR§	.20839	.13183	.25237*	.21714	.25139	−.22288
2.	CDL	.24674	.46472*	.18045	.22887	.41147‡	.08542
3.	ALF	.10133	.78529‡	.04985	.20664	−.06632	.09569
4.	ADL	.12652	.94412†	.03227	.07253	.06131	.00684
5.	IFC	.27937	.16289	−.01063	.79053†	.04741	−.08163
6.	REX	.66806‡	.19276	−.03714	.15827	−.17276	.00828
7.	LPF	.11048	−.04281	.50286‡	.07461	.04888	.00234
8.	DRO	.06567	.10591	.01691	.62562‡	−.08226	.01261
9.	RHG	.13645	−.02584	.09316	.04845	−.83754†	.00544
10.	PSF	.32360	.34248	.10119	.13830	.38859*	.11856
11.	OPC	.24058	.01814	.07121	.26483	.30307*	.02843
12.	RPD	.56317*	.09175	.30916	.41120	.10461	−.04092
13.	IRF	.69188†	−.02626	.28018	.04563	.03838	−.06345
14.	NSL	.61055*	.11470	.46890	.08662	.14499	.02539
15.	PEF	.06815	.11531	−.03747	−.03515	−.00299	.91057†
16.	RFR	−.03823	.11975	.02027	.24505	−.37687*	.24777‡
17.	VIT	−.20116	.31493	.30544	.44443*	.37261	.12433
18.	DRF	.51015*	.18444	.49933	−.04725	−.09961	.05223
19.	RRF	.29067	.14418	.78071†	−.03835	−.09829	−.09106
20.	MCF	.42829*	.10614	.24927	.10582	.17747	.12875

* Largest absolute value in each line indicating the most significant factor loading coefficient for each EVMTP variable.

† Largest absolute value in each column indicating the single most dominant variable for factor naming and interpretation.

‡ Second largest absolute value in each factor column indicating the second most dominant variable for factor naming.

§ Variable with the smallest difference between the absolute values of each pair of factor loadings (.25237 − .25139 = .00198) is the most subordinate, most dependent EVMTP variable.

revaluation in countries where the company has operations (IFC & DRO).
5. Factor 5—Maintaining good relationship with host government and rate of customs duties and customs legislation where the company has operations (RHG & CDL).
6. Factor 6—Performance evaluation of foreign subsidiaries and rules and requirements of financial reporting for foreign subsidiaries (PEF & RFR).

Exhibit 3 ranks the variables according to their dominance and independence. According to Exhibit 3 data, the single most subordinate and dependent variable is differentials in income tax rate and income tax legislation among countries (DTR). In contrast, the data also indicate that the single most dominant variable is IRF because it has the largest factor loading coefficient of .69188, within Factor 1; therefore, it is the single most dominant EVMTP variable. ADL is the most significant variable in Factor 2 followed by ALF. This finding confirms several theoretical

notions from the literature. First, the most dependent variable can be expressed as a function of the other more dominant factors as follows:

$$DTR = F \text{ (IRF \& REX, ADL \& ALF, RRF \& LPF, IFC \& DRO,}$$
$$\text{RHG \& CDL, RFR \& VIT)}$$

Tang's findings indicate that the variable overall profit to the company ranks as the highest rated. The low standard deviation also indicates a high level of agreement. Other variables that received high ratings included competitive position of foreign subsidiaries, performance evaluation, foreign restrictions on repatriation of profits or dividends, and maintaining adequate cash flows in foreign subsidiaries. Prior U.K. studies indicate that competitive position of foreign subsidiaries or maintaining adequate cash flows in foreign subsidiaries as important; however, both variables rank highly in this study, thus indicating British firms' heightened concern for their foreign subsidiaries. Attitudes of British firms regarding tax considerations reflect a less significant finding than in previous studies, probably due to a decrease in opportunities to manipulate income taxes. Lower ranking variables included domestic government requirements on direct foreign investments, risk of expropriation, and volume of interdivisional transfers. These low ratings indicate their lack of importance to British firms.

The factor-estimate matrix presented in Exhibit 4 is a supplement to the terminal solution. These factor estimate coefficients provide estimates of the normalized factor scores from the observed standardized scores. This matrix consists of regression weights used for computing the new factor scores. The conversion of the twenty skewed variables into six normally distributed factors can be done by multiplying the factor estimate coefficients by the twenty variables scores. These six estimated factor scores combined into one score represent an EVMTP model of measurement with a normal distribution, a mean of 0, and a standard deviation of 1.

The graphic description of the rotated orthogonal factors is presented in Exhibit 5. The plot of the terminal solution indicates the following:

1. The relative distance of the variables (data points) from the two axes, which represent the two factors, 1 & 2,
2. The direction of the variables in relation to the axes, that is, whether they are positive or negative, and
3. The clustering of variables and their positions, relative to each other, indicating the relationship between the factors.

The relationship between Factor 1 (horizontal) and Factor 2 (vertical) is presented in Exhibit 5. The plot presents Variable 9 close to the origin since it has small loading on both Factors 1 and 2. The cluster of Variables 12, 14, 6, and 13 load high on Factor 1 (horizontal) and low on Factor 2. In contrast, Variable 4 loads high on Factor 2 and low on factor

**Exhibit 4. Factor Score Coefficients for Normally Distributed
EVMTP Scores**

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
1. DTR	.01186	.02184	−.00334	.06494	.06448	.04492
2. CDL	−.00216	−.15561	.10380	.22090	.02433	.07156
3. ALF	−.06721	.04019	.12500	.11846	−.10358	−.10224
4. ADL	.02276	1.04645	−.30367	−.37177	.05041	−.09031
5. IFC	.04459	−.23968	−.05380	.69470	−.12605	.03249
6. REX	.31063	.11657	−.25946	−.06837	−.04610	−.00350
7. LPF	−.04485	.04550	.09164	−.01296	.04399	.02142
8. DRO	−.04316	.04884	−.01199	.13958	.03724	.00939
9. RHG	.01367	−.04963	.08190	.20095	−.68755	.03883
10. PSF	.06005	−.07335	.01885	.00902	.09836	.01168
11. OPC	.03066	−.10236	.03091	.09641	.05191	−.05812
12. RPD	.17467	.08120	−.08474	.04492	.04866	−.01064
13. IRF	.27778	.00015	−.04698	−.13561	.11850	−.06179
14. NSL	.17986	.05423	.14382	−.10009	.06357	−.06346
15. PEF	.04752	−.02188	−.05658	−.00096	−.00950	.94142
16. RFR	−.05124	.03362	.05117	.03582	−.08718	−.00380
17. VIT	−.24406	.17285	.15460	.15410	.14993	.06421
18. DRF	.10640	−.06877	.09044	−.00615	−.10268	.13817
19. RRF	−.11635	−.11625	.68356	−.04746	−.11043	−.06260
20. MCF	.16209	−.02079	.12933	−.02785	.10679	−.03118

These regression weights will be multiplied by the normalized observed scores for each variable, and then the products will be added. This sum will become Factor 1 with a normal distribution, a mean of 0, and a standard deviation equal to 1.

The normalized score representing Factor 2 will be computed in the same manner using the coefficients in the second column, etc.

1. This separation of the data point (EVMTP variables) clusters demonstrates graphically that these EVMTP f actors are indeed uncorrelated or orthogonal.[19]

In observing Exhibit 5, one should notice that a rather weak correlation is reflected by the clusters of data points. If one were to draw a straight line through the middle of each cluster to the origin, the two lines would be close to 90 degrees apart. An angle of 90 degrees between these imaginary lines indicates the absence of any multicollinearity. Because the angle in this case is close to 90 degrees, the multicollinearity among these EVMTP factors has indeed been minimized, which was one of the stated objectives of this study.

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[19] C.W. Harris (ed.), *Problems in Measuring Change* (Madison: The University of Wisconsin Press, 1963).

Exhibit 5. Graphic Presentation of Rotated Orthogonal EVMTP Factors
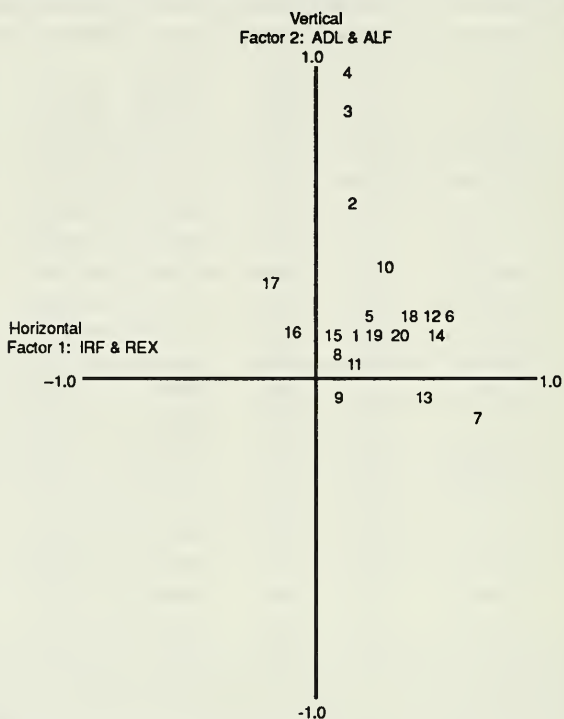
This is a plot of the coefficient values from Exhibit 3.

SUMMARY

The hypothesis of redundancy, multicollinearity, and skewed distribution has been introduced by the literature. This hypothesis has been confirmed by the present investigation of the correlation coefficients. Thus, the null hypothesis was reJected in favor of the alternative hypothesis, concluding that the initial twenty EVMTP variables were dominated by six orthogonal normally distributed factors.

After the orthogonal factors had been extracted, they were interpreted and named according to the highest loading variables. The variable IRF was ranked as the most dominant and the DTR turned out to be the most dependent variable. Subsequently, factor score coefficients have been computed to enable the conversion of the twenty EVMTP variables into the six factors. These factor score coefficients can be used later as regression weights to create a weighted-average index that will describe EVMTP potential.

CONCLUSIONS

The conclusions of this study are that the work of Tang and other investigators of EVMTP can be conducted more efficiently using six factors rather than twenty variables. These six most dominant factors can be computed as composites of the most significant variables. These factors and variables can be ranked by their dominance relative to each other. Thus, Factor 1 is the most dominant factor. Within this most significant factor, the most significant variable is IRF. Although the most dependent variable, the least dominant variable is DTR, which can be expressed as a function of the other most dominant EVMTP factor.

The conclusions of this study reinforce the concluding remarks made by Tang, which were as follows:

The results indicate that company profit after tax was the most important variable considered by the 47 respondent firms. Other important variables include the competitive position of foreign subsidiaries, divisional performance evaluation, foreign restrictions on repatriation of profits, and the maintenance of adequate cash flows in foreign subsidiaries. The administration of a transfer system, especially in a multinational context, is becoming more and more complicated, as tax and customs authorities in many countries intensify their surveillance of transfer pricing. To be effective, a transfer pricing system must be designed not only to achieve internal corporate objectives, but also to lessen the firm's vulnerability to attacks by both national or supra-national governmental authorities.[20]

IMPLICATIONS

The implication of this study is that the measurement index can be used for either cross-sectional and/or time series analysis. For cross-sectional analysis, one could compare the EVMTP scores of several different organizations for a given period of time and rank order them. Thus, one can identify the organization with the highest EVMTP potential. For time series analysis, one could compare a single organization's score over several periods of time and identify future trends.

Finally, this study may provide some background for the design of a path analysis. In such an analysis, the interrelations among the variables can be further explored based on the relative dominance of variables. DTR, the most dependent variable, can be expressed as a function of the EVMTP factors. Each of the factors can then be expressed as a function of its highest loading variables

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[20] Tang, "Environmental Variables of Multinational Transfer Pricing."

APPENDIX A. EVMTP CORRELATION COEFFICIENTS

Vars	Var 1	Var 2	Var 3	Var 4	Var 5	Var 6	Var 7	Var 8
Var 1	1.00							
Var 2	.25	1.00						
Var 3	.23	.45	1.00					
Var 4	.15	.55	.76	1.00				
Var 5	.21	.26	.28	.28	1.00			
Var 6	.10	.20	.34	.22	.34	1.00		
Var 7	.15	.20	.05	−.02	.06	.03	1.00	
Var 8	.15	.28	.20	.15	.52	.19	.12	1.00
Var 9	−.11	.34	.09	−.04	−.00	.22	.07	.20
Var 10	.28	.41	.27	.43	.31	.21	.05	.09
Var 11	.26	.24	.06	.13	.25	.22	.14	.22
Var 12	.34	.43	.23	.20	.56	.42	.20	.22
Var 13	.22	.27	.06	.06	.25	.43	.22	.03
Var 14	.42	.40	.20	.17	.27	.40	.34	.09
Var 15	−.23	.13	.21	.11	−.08	.07	−.01	.01
Var 16	−.05	−.03	.16	.10	.20	.06	−.08	.16
Var 17	.25	.38	.26	.29	.39	−.09	.14	.26
Var 18	.16	.20	.21	.28	.13	.40	.26	.03
Var 19	.22	.20	.16	.22	.08	.23	.42	−.01
Var 20	.25	.30	.11	.21	.17	.27	.23	.19

	Var 9	Var 10	Var 11	Var 12	Var 13	Var 14	Var 15
Var 9	1.00						
Var 10	−.25	1.00					
Var 11	−.22	.18	1.00				
Var 12	−.02	.24	.37	1.00			
Var 13	.16	.31	.16	.54	1.00		
Var 14	.02	.40	.10	.50	.63	1.00	
Var 15	.01	.15	.08	.00	−.01	.07	1.00
Var 16	.32	−.04	−.14	.13	−.10	.00	.24
Var 17	−.30	.38	.19	.18	−.01	.17	.11
Var 18	.15	.29	.13	.41	.42	.53	.04
Var 19	.16	.11	.12	.48	.41	.49	−.06
Var 20	.02	.37	.28	.35	.27	.12	.14

	Var 16	Var 17	Var 18	Var 19	Var 20
Var 16	1.00				
Var 17	.06	1.00			
Var 18	.14	.06	1.00		
Var 19	.00	.19	.62	1.00	
Var 20	−.04	.10	.46	.24	1.00

From Tang (1981)
See Appendix B for full name of the variables.

APPENDIX B. KEY TO VARIABLE NUMBERS AND NAMES

Variable number	Variable name
VAR 1	Differentials in income tax rate and income tax legislation among countries (DTR)
Var 2	Rate of customs duties and customs legislation where the company has operations (CDL)
Var 3	Antitrust legislation of foreign countries (ALF)
Var 4	Antidumping legislation of foreign countries (ADL)
Var 5	Rates of inflation in foreign countries (IFC)
Var 6	Risk of expropriation in foreign countries where the company has operations (REX)
Var 7	The interests of local partners in foreign subsidiaries (LPF)
Var 8	Devaluation and revaluation in countries where the company has operations (DRO)
Var 9	Maintaining good relationship with host government (RHG)
Var 10	The competitive position of subsidiaries in foreign countries (PSF)
Var 11	Overall profit to the company (OPC)
Var 12	Restrictions imposed by foreign countries on repatriation of profits or dividends (RPD)
Var 13	Import restrictions imposed by foreign countries (IRF)
Var 14	The need of subsidiaries in foreign countries to seek local funds (NSL)
Var 15	Performance evaluation of foreign subsidiaries (PEF)
Var 16	Rules and requirements of financial reporting for foreign subsidiaries (RFR)
Var 17	Volume of interdivisional transfers (VIT)
Var 18	Domestic government requirements on direct foreign investments (DRF)
Var 19	Restrictions imposed by foreign countries on the amount of royalty or management fees that can be charged against foreign subsidiaries (RRF)
Var 20	The need to maintain adequate cash flows in foreign subsidiaries (MCF)

APPENDIX C. EXPLANATION OF KEY TERMS

Communality is the percentage of the variables' variance that contributes to their correlation with other variables. It is also the proportion of variance that one variable has in "common" with the other variables.

Eigenvalue is the amount of total variance in the original data that is explained by a given factor. It shows the relative dominance or importance of a factor.

Factorial complexity of variables is a measure of dependence and correlation of a given variable and the rest of the factors and/or variables. The factorial complexity of a variable is set by the number of factors on that it loads significantly (factor loading of greater than .3). Thus, a variable that loads significantly on two factors has a factorial complexity of 2.

Factor loading is a coefficient of association between a variable and a factor. The factor loading's magnitude indicates the relative dominance of a variable compared to other variables within a given factor.

Factor scores are the values of the factor. They are analogous to ~ the values of the original variables. In contrast to variable scores, factor scores are computed from the original observed variable scores. Accordingly, factor scores are derived rather than observed. The derivations are done by the factor score coefficients.

Index of measurements can be computed by a sum of factor scores. The index of measurement can be computed from raw (unstandardized) or standardized data. The score coefficients should be used for unstandardized data, and the varimax factor loadings should be used for the standardized data.

Orthogonal factor (Empirical factor) is a variable that is inferred and constructed from the observed (relatively high-loading) variables. Likewise, it is composed by grouping some of the original redundant input variables. Orthogonal factors are defined by rotating uncorrelated axes. In contrast, the axes of oblique factors are correlated.

Theoretical factor is composed only according to theoretical arguments found in the literature. It is in contrast with an empirical factor that is composed not only according to theoretical arguments but also through the statistical procedure of factor analysis.

Variance explained (Percentage of variance explained) measures how much of the original variance of all the variables is represented by a single factor.

Varimax rotation describes the rotation of diametrically opposed axes that represent the factors. It is done in order to identify a set of factors such that each factor has a simple factorial structure. That is, some factor loadings are close to +1, or -1, and the rest are close to zero.

APPENDIX D. FACTOR ANALYSIS MODEL EXPLANATION

This initial solution, based upon the principal component model, can be compactly expressed as follows:

(1) $Z(J) = Z(J,1) * F(1) + A(J,2) * F(2) + \dots + A(J,I) * F(I) + \dots + A(J,N) * F(N) + E(J)$

where:

$Z(J)$	= original variable J scores in standardized form.
$A(J,I)$	= standardized multiple regression coefficient of Variable J on Factor I.
$F(I)$	= Factor I scores replacing the original variable scores.
$E(J)$	= an error term that includes all scores of unexplained variables in Variable J that are not accounted for by all the factors.
J	= index for the variables: 1,2,...,N. = index for the factors: 1,2,...,N.
I	= number of variables.
N	= number of factors.

The communality describes the total variance of an original variable that is accounted for by a combination of all the common factors. It can also be stated as follows:

(2) $H(J)**2$ = the sum of $A(I,J)**2$

where:

J	= an index for Variable J.
I	= an index for Factor I.
$H(J)^{**}2$	= communality for Variable J.
$a(I,J)^{**}2$	= factor loading of Variable J on Factor I squared.
J	= 1
I	= 1, 2,...,N. N
N	= number of factors.

The eigenvalue is the amount of the total variance in the original data that is explained by a given factor. It shows the relative importance of this factor. The eigenvalue is calculated as the sum of squared factor loadings (columns of the factor loading matrix) for each factor or by applying the formula (2) where:

J	= 1,2,...,M; and
I	= 1.
M	= number of variables.

The communality is used to compute the portion of explained variance contributed by each factor. The communality can be expressed formally as follows:

(3) Pct of var F(I)   = Sum of $A(J,I)^{**}2$/Sum of $H(J)^{**}2$

where:

I	= an index for Factor I.
J	= an index for Variable J.
Pct of var	= percent of variance in variables explained by F(I).
F(I)	= factor score of Factor I.
$A(J,I)^{**}2$	= squared loadings for Variable J on Factor I.
$H(J)^{**}2$	= squared communality of J variables.
I	= 1,2,...,N.
J	= 1,2,...,m.
N	= number of factors.
M	= number of variables.

The Impact of Published Annual Financial Reports on Share Prices in Saudi Arabia

MAHMOUD ABDELSALAM and DIANE SATIN*

Financial reporting is generally recognized as not being an end in itself but as being intended to provide information that is useful in business and economic decisions.[1] Using this point of view, many empirical studies have been conducted to investigate the usefulness of corporate financial reports by shareholder surveys and efficient market hypothesis (EMH) tests of annual report information.[2] The aim of this study is to indicate the impact of published corporate financial reports on share prices in Saudi Arabia.

The authors found that earnings announcements do not significantly affect Saudi stock returns. This fact itself may be intrinsically uninteresting, but it contrasts with Beaver's price reaction study.[3] The authors suggest several proposals in this paper to explain the apparent Saudi nonreaction to published financial information.

This study applies some of the research methods used in earlier studies in the United States and other countries to investigate the share price and return reactions to the publication of Saudi corporate financial reports.

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[1] Financial Accounting Standards Board, *Statement of Financial Accounting Concepts No.1* (Stamford, Conn.: FASB, 1978).
[2] R.D. Hines, "The Usefulness of Annual Reports: The Anomaly between the Efficient Markets Hypothesis and Shareholder Surveys," *Accounting and Business Research* (Autumn 1982).
[3] W. Beaver, "The Information Content of Annual Earnings Announcements," *Journal of Accounting Research, vol. 6* (1968).

EARLIER STUDIES

Since 1968 researchers in the field of accounting have used empirical studies to test the impact of published corporate financial reports on the stock exchange prices in the United States and other countries. Some of these works include the following:

- Ball and Brown found a strong positive association between the sign of accounting profit changes and the sign of stock price changes reported by the New York Stock Exchange (NYSE).[4]
- Beaver documented a reaction in both the price and volume of stock trades to annual profit announcements in NYSE prices.[5]
- Lev and Yahalomi were unable to find an unusual volume reaction to the release of corporate financial statement in the Tel Aviv Stock Exchange.[6]
- Deakin, Norwood, and Smith found a slight inefficiency of price changes of financial reports during the announcement weeks in the Tokyo Stock Exchange.[7]
- Niarchos and Georgakopulos reported that the Greek stock market was not efficient in that investors reacted slowly and gradually to new information revealed by the corporate annual reports of the Athens Stock Exchange.[8] The authors rely heavily on Beaver's methods in this study.

DESCRIPTION OF THE SAUDI STOCK MARKET

In the early 1970s the Saudi informal stock market began with thirty-two brokers (market makers) who bought and sold stocks for both themselves and Saudi investors. Only in 1984 were stock regulations officially issued to control the Saudi market. The committee formed to issue and control these regulations comprised representatives of the Ministry of Finance and National Economy, the Ministry of Commerce, and the Saudi Monetary Fund. Under this committee the main rules of the Saudi stock market are as follows:

1. All market transactions (buy or sell) must flow through Saudi commercial banks.
2. Banks were forbidden to buy or sell stocks for their own portfolios.
3. Every bank should establish a central unit for stock trade connected

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[4] R. Ball and P. Brown, "An Empirical Evaluation of Accounting Income Numbers," *Journal of Accounting Research* (Autumn 1968).
[5] Beaver, "The Information Content of Annual Earnings Announcements."
[6] B. Lev and B. Yahalomi, "The Effect of Corporate Financial Statements on the Israeli Stock Exchange," *Management International Review* (1982).
[7] E. Deakin, G. Norwood, and C. Smith, "The Effect of Published Earnings Information on Tokyo Stock Exchange Trading," *International Journal of Accounting* (Fall 1974).
[8] N. Niarchos and M. Georgakopulos, "The Effect of Annual Corporate Profit Reports on the Athens Stock Exchange: An Empirical Investigation," *Management International Review* (1986)

with its branches and other banks in Riyadh, the capital of Saudi Arabia.

4. Every corporation must publish quarterly financial statements in two local Saudi newspapers.

5. The Stock Control Department of the Saudi Monetary Fund must supervise the stock market and publish weekly share prices in Saudi newspapers at the end of every week of trade.

Presently the shares of more than forty Saudi corporations are traded in the stock market; 33 million shares representing an investment of 38 billion Saudi Riyals (SR) are invested. (One U.S. dollar equals 3.75 S.R.)

The regulations for companies in Saudi Arabia issued by the Ministry of Commerce in 1965 (Article 89) stipulate the following:

1. The board of directors shall, at least sixty days prior to the date set for holding the annual general meeting, prepare for every financial year of the company a balance sheet, a profit and loss statement, and a report on the company's operations and financial position and on the method that it proposes for the distribution of net profit.

2. . . . copies of financial reports shall be placed at the disposal of stock-holders by the head office of the company at least twenty-five days prior to the date set for such a general meeting.

3. The chairman of the board of directors must publish financial reports in a newspaper distributed in the locality of the headquarters of the company.

4. . . . a copy of the financial reports must be sent to the General Administration for Companies (Ministry of Commerce) at least twenty-five days prior to the date set for the general meeting.

The firms also fall under uniform, but relatively new, restrictions. Although the companies have been required to publish financial information for more than twenty years, the fact that the Saudi stock market itself was regulated beginning in 1984 forces our study to concentrate on a short time period (1985–86).

DATA DESCRIPTION

Sample Selection

This study is based on a sample of thirty firms: twenty-eight Saudi corporations existing in 1985 and twenty existing in 1986. The following criteria were used to select the corporations:

1. Weekly share prices are available and published by the Stock Control Department (Saudi Monetary Fund).

2. The annual financial reports are published in the Saudi local newspaper at the end of a firm's fiscal year.

3. The corporation must be registered in the General Administration for Companies (Ministry of Commerce), and its shares must be traded in the Saudi stock market.

4. Because of the small sample size, no restrictions have been made on the dates of the firms' fiscal year ends or their announcement dates. The report dates vary from November 15, 1985, to May 31, 198, for the 1985 sample and December 17, 1986, to April 22, 1987, for the 1986 sample (see Exhibit 1 for the number of firms in our sample for 1985 and 1986, and both years, by sector.)

Exhibit 1. Sample of Saudi Corporations by Sector

	All firms in 1985	All firms in 1986	Firms appearing in both 1985 and 1986
Financial (Banks)	7	7	6
Industrial	10	6	6
Service	8	4	4
Agriculture	3	3	2
Total	28	20	18

Share Prices

Actual share prices at the end of each of 114 weeks, including 8 weeks before and following both the 1985 and 1986 publication of corporate financial reports, were derived from the official prospectus of weekly share prices published by the Stock Control Department (Saudi Monetary Fund) for each corporation.

Accounting and Nonaccounting Information.

The following information has been collected from annual financial reports and other sources of information: net profit, dividends per share, whether firms are subsidized by the government, to which firms the government contributes, each firm's economic sector, and those firms that existed in both 1985 and 1986. *Subsidized firms* are those for which the Saudi government guarantees a minimum profit to the shareholders. *Government contribution* refers to firms in which the government itself is a shareholder. The economic sectors for these firms include financial, industry, service, and agriculture.

Average Weekly Returns

The weekly rate of return for each firm in each year (data permitting) was computed for each of fifteen weeks from −7 through +8, where +1 is the week in which the announcement comes out. The authors used the following formula:

$$R_{it} = (\text{share price}_{i,t-1} - \text{share price}_{i,t})/\text{share price}_{i,t-1} \qquad (1)$$

where

R_{it} is the return of firm i in week t,

t–1 refers to the previous week's data.

The average weekly return is the sum of the individual returns of firms divided by the number of firms that have return data for that week:

$$\text{average weekly return } (R_{\alpha t}) = \Sigma_i R_{it}/N \qquad (2)$$

where

$N \leq 28$ in 1985 and ≤ 20 in 1986.

For example, the first 1985 average weekly return (for week –7) would be:

$$\{\Sigma_i[(\text{share price}_{i,-7} - \text{share price}_{i,8})/\text{share price}_{i,8}]\}/28$$

Average weekly returns were calculated and graphed according to the following:

1. Total firm sample per year for 1985 and 1986;

2. Firms with increasing profit and (separately) firms with decreasing profit from 1985 to 1986;

3. Firms with increasing dividends per share and (separately) those with decreasing dividends per share from 1985 to 1986;

4. Firms with and without government subsidies, which are common in Saudi Arabia. For some firms the state guarantees a minimum profit for the shareholders;

5. Firms with and without government contribution. In this case the state is a shareholder;

6. Firms in each of the four economic sectors: financial (banks), industrial, service, and agriculture;

7. The eighteen firms existing in both 1985 and 1986, and those divided into subsidized and not subsidized.

The fact that some firms are subsidized will affect both the tests and results of this study. Prices are believed to be a measure of the future earnings stream of a company. If the government guarantees a minimum profit for a firm, its prices should react little to negative earnings news because those reports mean little to the earnings of the shareholders.

RESEARCH METHODS AND RESULTS

Analysis of average returns

Average weekly returns for the seven weeks before and eight weeks following the publishing of the Saudi corporate reports were graphed. The announcement dates align on the graphs so that each firm's report has been published sometime in the seven days between –1 and +1 on the horizontal axis. (That is, the publication of prices does not exactly match the

date of the earnings announcement.) These graphs show little evidence that earnings announcements affect average returns.

For example, returns during the period of financial statement publication (−1, +1) are higher than those for other weeks for all firms on average in 1985, but not in 1986. When the firms are categorized as to those with increasing and those with decreasing profits we would expect, according to valuation theory, an upward trend in returns for the former and a downward trend for the latter after the earnings announcement—an increase in earnings indicates an increase in total dividends if the payout percentage remains constant—yet 1985 indicates an increase in both groups of returns, and both groups decrease in 1986 from weeks −1 to +1.

The reaction (positive or negative change) to the earnings announcements during the publication week (−1 to +1) and the average return at the end of the publication week for each group of firms described in the previous section is presented in Exhibit 2. The groups of firms that have their highest average return during the immediate announcement weeks (−1 to +2) are listed in Exhibit 3. These data reconfirm that no significant price reaction to the publication of the Saudi financial statements seems to exist, at least in the fact that the data are inconsistent across the two years as well as across opposite groups (e.g., profit increases/decreases) in one year.

Because graphs and tables may not indicate conclusive evidence, the authors prepared two sets of tests of the hypothesis that Saudi stock returns are not significantly affected by their firms' earnings announcements. The first test uses a statistical description of the Saudi market. The second, a nonparametric test, avoids the problem of the first in that it is not a joint test of the hypothesis and a proposed market model.

Summary Statistic

This test almost replicates that of Beaver, who calculated an average one-period squared return error divided by a sample error variance (with the latter calculated for a nonannouncement period) for each of seventeen weeks surrounding an announcement date. He called this statistic U and used the Sharpe market model to calculate his sample errors.[9] Using squared errors abstracts from the problem of the direction in which the announcement period return deviations move. He noted that his U averaged across firms increases sharply just after the earnings announcement, indicating a significant return reaction to the earnings news.

The authors have chosen to use the following descriptive model of returns; we assume it holds for the Saudi market:

$$R_{it} = \Sigma_i + \alpha_i + \beta_i R_{\alpha t} + u_{it} \tag{3}$$

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[9] Beaver, "The Information Content of Annual Earnings Announcements."

Exhibit 2. Reaction of Share Prices (Returns) to Published Financial Reports

Firm description	Number of firms	Reaction at publication date	Average at publication period −1 to +1	Figure number
1. All firms				
1985	28	positive	+2.3	1a
1986	20	negative	−.35	1h
2. Earning announcement				
Increasing profits, 1985	2	negative	−1.3	2a
Increasing profits, 1986	2	negative	−2.2	2b
Decreasing profits, 1985	12	positive	+4.7	2c
Decreasing profits, 1986	12	negative	+.25	2d
3. Dividend announcement				
Increased, 1985	1	positive	+5.2	3a
Increased, 1986	1	negative	0.0	3b
Decreased, 1985	3	negative	−.18	3c
Decreased, 1986	3	negative	+.65	3d
No change, 1985	9	positive	+3.4	3e
No change, 1986	9	negative	−1.9	3f
4. Firms subsidized and not subsidized				
Subsidized, 1985	5	negative	−3.0	4a
Subsidized, 1986	3	negative	−1.2	4
Not subsidized, 1985	23	positive	3.5	4c
Not subsidized, 1986	17	negative	−.19	4d
5. Firms with government contribution and no government contribution				
With contribution, 1985	8	positive	+6.8	5a
With contribution, 1986	6	positive	−.08	5b
Without contribution, 1985	20	positive	+.60	5c
Without contribution, 1986	14	negative	−.46	5d
6. Economic sector				
Financial sector, 1985	7	positive	+2.0	6a
Financial sector, 1986	7	negative	+.71	6b
Industrial sector, 1985	10	positive	+3.8	6c
Industrial sector, 1986	6	positive	−.12	6d
Service sector, 1985	8	negative	−.11	6e
Service sector, 1986	4	negative	−1.9	6f
Agricultural sector, 1985	3	positive	+4.9	6g
Agricultural sector, 1986	3	negative	−1.2	6h
7. Similar types of firm				
Firms that exist in both 1985, 1986 (1985)	18	positive	+2.7	7a
Firms that exist in both 1985, 1986 (1986)	18	negative	−.14	7b
Similar type subsidized, 1985	3	positive	+3.9	7d
Similar type subsidized, 1986	3	negative	−1.2	7e

Exhibit 2. (Continued)

Firm description	Number of firms	Reaction at publication date	Average at publication period −1 to +1	Figure number
Similar type not subsidized, 1985	15	negative	−3.0	7f
Similar type not subsidized, 1986	15	negative	+.07	7g

Exhibit 3. Groups of Firms with Highest Returns
Around the Announcement Week (+1)

Figure No.	Description of firm group	Number of firms in sample	Week of absolute highest return	Period of relative highest highest return in weeks −2 to +3
1a	All firms—1985	28	+1	−1 to +2
2c	Decreasing profits from 1985 to 1986; 1985 returns	12	+1	−1 to +1
3a	Dividends increasing from 1985 to 1986;1985 returns	1	+2	1 to 2
3c	Dividends decreasing from 1985 to 1986; 1985 returns	3	−1	−2 to −1
3d	Dividends decreasing from 1985 to 1986; 1986 returns	3	−1	−2 to +1
3e	Dividends unchanged from 1985 to 1986; 1985 returns	9	+1	−1 to +2
4c	Firms not subsidized	23	+1	−1 to +1
5a	Firms with government contribution in 1985	8	+1	−1 to +2
6c	Industrial sector, 1985	10	+1	−1 to +1
6e	Service sector, 1985	8	+2	+1 to +3

R_{it}, the return for firm i in week t, has been calculated just as in Equation (1). Because the Saudi market is so small and because no "market return" is really available, the authors substitute their average weekly return $R_{\alpha t}$ described in Equation (2).

To test the null hypothesis that there are no significant return deviations from the descriptive model around the earnings announcement date, the coefficients for this model— Equation (3)—were first estimated. Using thirty weeks of data prior to the variances to be tested, R_{it} was regressed on $R_{\alpha t}$ to find the estimates α_i and β_i. These were placed in the original thirty weeks' equations to determine the sample errors:

$$e_{it} = R_{it} - \alpha_i - \beta_i R_{\alpha t} \qquad (4)$$

Squaring the errors, summing them, and dividing them by T=30 gave a sample error variance for each firm, VAR_i. A sample deviation for the data of the week following our thirty-week estimation period can then be calculated by using R_{it} and $R_{\alpha t}$ for the following week for the α_i and β_i estimated previously.

This error, $e_{i,31}$, squared and divided by VAR_i, yields the summary statistic for firm i. Firm summary statistics were calculated for each of seventeen weeks around the announcement date, labeled n = –8 through +8, with 0 representing the week in which the earnings were published. Finally, for each of the seventeen weeks, these statistics for firms i=1, I were summed and divided by the number of firms with data in that week:

Average summary statistic for

$$\text{week } n; -8 \le n \le 8 = \sum_{i=1}^{I} (e_{i,n} / VAR_i)/I_n \tag{5}$$

The 1986 data indicate that the return variances did not increase at the time of the earnings announcement, although they indicate some pre-announcement activity. The 1985 data are a bit more prone to misinterpretation, for the week 0 summary statistic does indeed make a positive jump. However, this ratio—see Equation (5)— is still less than 1, which means it is not a statistically significant deviation regardless of its appearance on the graph. Thus, the null hypothesis that earnings announcements do not significantly affect Saudi stock prices could not be rejected.

Mann-Whitney Test

To reconfirm the results of the average summary statistic, we applied a nonparametric test of a change in means of the groups of returns themselves. For both 1985 and 1986 the samples of returns at the end of the announcement week were compared, independently, with those of weeks –1 through –4. Exhibit 4 presents the results of this test. No evidence was found to reject the null hypothesis that the mean does not change. That is, the earnings announcement has not caused a significant reaction in weekly returns. The Appendix contains a detailed description of this test.

DISCUSSION AND CONCLUSION

To reiterate the main point, no significant price reaction to earnings announcements for Saudi Arabian stocks was found. Comparing our work to that part of Beaver's paper dealing with price reactions,[10] the authors noted a few technical reasons and other possible explanations for why they found no reaction in their (Saudi) sample, although Beaver found a strong return reaction in the U.S. market.

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[10] Ibid.

Exhibit 4. Test Statistics for Mann-Whitney (Nonparametric) Test of Change in Distribution

1985 —Mann-Whitney T Statistic for 28 elements
   90% confidence range 697.920 to 898.080

Comparing week +1 to week	T Statistic
−1	764.0
−2	745.5
−3	713.0
−4	724.5

1986—Mann-Whitney T Statistic for 20 elements
   90% confidence range 349.372 to 470.628

Comparing week +1 to week	T Statistic
−1	433.5
−2	450.5
−3	428.5
−4	446.0 18

As to technical differences, even without restricting our sample to meet certain criteria, we had at most forty firms in the entire population. So, we dealt with a small cross-sectional sample size that may affect our results. The U.S. market trades the shares of hundreds of firms; Beaver's final sample contained 143 firms.

In addition, the Saudi market provides uniformly regulated data beginning in 1984. That, in combination with having weekly price figures rather than daily returns, gave us a small time series sample: at most only 114 weeks of data for any one firm in this market.

With respect to other explanations for a lack of market reaction, first and most compelling is the fact that 15 to 17 percent of the Saudi companies are subsidized, and the government is a major shareholder (owning 25 to 70 percent of some firms) in another 29 percent. Because the subsidized firms guarantee a dividend to shareholders, their earnings figures ought to have little if any influence on prices, assuming price is indeed the present value of investors' expectations of future dividends.

The Saudi government does not behave as other shareholders; it does not reapportion its investments among firms when news of firm value is published. So, for companies with a government capital contribution, even if there were an investor reaction to earnings announcements, it would be from only 30 to 75 percent of the stockholders and therefore theoretically would not significantly influence prices. (Price reaction is said to be from investors as a whole reacting to news in earnings announcements; volume reaction comes from individual investors revising their portfolios after changes in expectations.)

This may also explain the larger insignificant return change in 1985 than in 1986. Because the 1985 financial statements are published after only one year of the market's regulated operation, investors may have expected the announcements to contain news of the value of their stocks. However, by the time of the second year's announcements, the shareholders may have "learned" that the published earnings figures mean little with respect to firm value, and thus the 1986 returns have not even an insignificant reaction in week 0.

In contrast, there may be a brief and therefore unobserved price reaction immediately around the announcement date. We have prices only at the end of the week in which the announcement has been published, and not the returns on the day of and days surrounding those publications. If prices react temporarily, but settle down again by the end of the week, we would not note this reaction in the weekly returns or end of week regression errors.

In terms of timing, these financial statements are published several weeks after the firms' year ends. This late information may already have leaked to the investors and the announcements themselves may carry no new information to the public. Thus, prices would not react strongly at the time of the announcement, though they may gradually have reacted to the trickling of earnings news over several weeks.

This could also explain the insignificant increase in the average summary statistic for week 0 in 1985 but not in 1986. With the new regulations in effect in 1985, investors may have believed the leaked earnings news did not contain all the information that the published statements would reveal. Thus, returns show a slight increase at the announcement date in that year from investors' anticipation of more news. However, upon finding that the published earnings contain no new information, the shareholders do not exhibit the same anticipation at the 1986 earnings publication date.

In contrast with this "late news" explanation, it is also possible that the Saudi market is not yet efficient with respect to share value information in financial reports. This is possibly because the Saudi market is still young. Either the prices do not immediately reflect earnings news because the news disseminates slowly, or perhaps Saudi shareholders do not know how to interpret and use the information with regard to investment decisions.

One may argue that the average summary statistics show no significant reaction because the model used —Equation (3)— does not describe the Saudi stock market accurately. However, that does not explain the similar results using a nonparametric test, comparing only the return values of two time periods without any assumptions about the shape of the return distributions.

Concerning government-subsidized and government-owned firms, given the result that prices do not react to the publication of firm financial statements, individual investor reaction to financial statement publication can be tested by examining volume changes around announcement dates. That could be the next step in research on the Saudi stock market. Hopefully, the results of such a study will at least narrow the list of possible explanations for the lack of price reactions.

APPENDIX. THE MANN-WHITNEY TEST

In comparing two samples one makes the following assumptions:
1. The samples are independent.
2. The only difference between the two samples is the effect one wishes to test. For example, the two sets of returns are for the same firms and differ only by time period, where the major occurrence between the control sample (weeks −4 to −1) and the test sample (announcement week) is the publication of the financial statements.

To perform the test, one orders the members of both samples together and ranks them 1 through N (N = 56 for 1985 and 40 for 1986). One then sums the ranks of only the test sample, getting the statistic we call T. One may then calculate a confidence interval for T, which depends also on N, for any a level (we have chosen a = .10). The null hypothesis tested is that the means of the two samples do not differ, or the distributions of the two samples are the same, without having to specify the distribution itself.

Accounting Educational Systems in Southeast Asia: The Indonesian and Singaporean Experiences

SEE LIANG FOO*

Singapore and Indonesia are both classified as developing nations; however, due to cultural, political, and historical reasons, their accounting educational systems differ both in structure and the quantity and quality of the accounting graduates produced. For example, despite Indonesia's large population of 170 million, it has only approximately 4,000 registered accountants compared with more than 5,000 registered accountants in Singapore, which has a population of only slightly more than 2.5 million.

According to Enthoven, accounting systems operate within the socioeconomic framework and need to be in tune with it.[1] The desired accounting educational pattern to be followed must consider economic aims and means. In many Third World economies, one of the major weaknesses is the lack of correlation between educational requirements and the socioeconomic environment. They also often duplicate foreign educational systems without assessing them carefully in view of the country's requirements.

This article examines the comparative differences between the accounting educational systems in Singapore and Indonesia and attempts to identify the causes of these differences.

HISTORICAL, POLITICAL, AND ECONOMIC BACKGROUND

Singapore and Indonesia shared the same historical fate in being colonized, but their experiences differed. In the case of Singapore, other than its brief occupation by the Japanese in the 1940s, the British were Singapore's only colonial power before it gained self-government in

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[1] A.J.H. Enthoven, *Accounting Education in Economic Development Management* (Amsterdam: North-Holland, 1981).

1959. Besides the Dutch, Indonesia was also colonized by the Portuguese, French, and British. All were there for the lucrative spice trade. The Dutch stayed the longest, for approximately 350 years. The Indonesians confined themselves to small businesses, usually family owned or partnerships. These features had significant political and economic consequences; after independence in 1945, the economic infrastructure or well-trained personnel were insufficient to manage the economy and the country.

After Indonesia's independence, due to the reaction of Indonesians to the Dutch rule, there were antiforeigner sentiments and general apprehension, which resulted in the nationalization of foreign businesses in the late 1950s and early 1960s. The economic and political stability was also adversely affected by the political turmoil. With the political situation gradually becoming more stabilized under the Suharto Government, however, some foreign investors' confidence was restored, although many bureaucratic constraints on foreign business activities in Indonesia were still present.

Singapore is a very small island state with a population of more than 2.5 million and virtually no natural resources. Deprived of natural resources, Singapore thrived historically on entrepot trade due to its strategic location. The latter brought the British to Singapore.

After self-government was attained in 1959, a massive industrialization program began, and by the 1980s the manufacturing sector had become the mainstay of the economy. More than 78 percent of the population were engaged in commerce and manufacturing. Much of the economic growth was generated by foreign investment attracted by the government providing policies of providing good infrastructure, attractive fiscal incentives, and a stable political climate.

With a per capita income of over U.S. $7,000 per year, Singapore's standard of living is second in Asia only to that of Japan. An educated and well-trained work force and a free enterprise economy that imposes no restrictions on ownership, expatriate employment, or the repatriation of investment capital and profits gave Singapore a competitive edge over many neighboring countries as a location for investment.

COMPARATIVE DIFFERENCES IN ACCOUNTING EDUCATIONAL SYSTEMS

The main differences between Indonesia and Singapore in accounting education and manpower are noted in the following comparative chart:

Factors	Indonesia	Singapore
1. Sources of influence	Dualism in practice. Dutch influence at the accounting technician level and U.S. influence at the tertiary level.	Predominantly influenced by the British.

2. Foreign aid	Accounting education program dependent on foreign aid since the 1950s.	Funds primarily from the government.
3. Tertiary institutions teaching accounting	There are six state universities and numerous private universities. This gives rise to coordination and harmonization problems and also varying standards.	There is only one tertiary institution conferring an accounting degree.
4. Output of graduates	Relatively low at an average of 300–500 per year in recent years.	Over 400 in 1988; the number is expected to increase over the years.
5. Staffing	Lecturers are very poorly paid. Most have other outside jobs resulting in poor supervision and standards in teaching. There is also a critical shortage of properly trained accounting teachers.	Pay structure comparable with the commercial sector. The university is able to attract high-calibre staff committed to working full-time.
6. Textbooks and teaching materials	Very few textbooks translated and usually outdated books are used.Moreover, library facilities and infrastructure are inadequate.	Abundant textbooks and library facilities because substantial resources and funds have been committed to acquire the latest and most modern amenities.
7. Compulsory three years postqualification employment with the government	Required by law.	No such requirement.
8. Availability of overseas accounting professional courses	Not available, and moreover, such qualifications are not recognized by the Indonesian Accountants Institute (IAI).	Most British accounting professional bodies, such as CACA, CIMA, and ICSA, conduct courses and examinations in Singapore. Therefore, there are other sources from which Singaporeans can acquire accounting qualifications.

Accounting Education in Indonesia

Bookkeeping was first taught in Indonesia in high schools and commercial schools, but enrollment was usually limited to students of privileged status, such as the children of wealthy businessmen. Dutch staff from the Tax Office, the Audit Office, or the Treasury offered private tutoring. The materials used were Dutch; each tutor set his or her own examination and awarded his or her own certificate.

Prior to the enactment of Law No. 34/1954, it was not possible for Indonesians to qualify as professional accountants unless they studied in the Netherlands and became members of the Netherlands Institute of Accountants. The new law enabled many   Indonesians to become registered accountants through study in their own country. Under this law a person could become a registered accountant by obtaining a master's degree in accounting either from a state university or from an accredited private university or the government accounting school (STAN). Those with a master's degree from an unaccredited institution must also pass an examination organized by The Committee of Experts appointed by the Ministry of Education and Culture. Persons with these qualifications are required to register with the Directorate of State Accountancy in the Ministry of Finance. Before being allowed to establish a public accounting firm, a qualified person must have worked for the government for a period of a least three years. This was required by Act No. 8/1961, the objective of which was to ensure that the government was able to meet some of its staffing needs in the field of accountancy.

In 1952 the University of Indonesia became the first tertiary institution to offer an accounting course. Students were enrolled in the Economics Faculty and in 1957 the first four Indonesian accountants were graduated. State universities outside Jakarta—namely Universitas Pajajaran in Bandung (1961), Universitas Sumatera Utara in Medan (1962), Universitas Airlangga in Surabaya (1962), Universitas Gadjah Mada in Yogjakarta (1964) and Universitas Brawijaya in Malang (1977)— later offered an accounting program. Accounting in Indonesia is taught within the Faculty of Economics, where specialization in accountancy occurs after the second or third year of a five-year master's (Sarjana) program. The Sarjana Muda (bachelor's degree) and the full Sarjana programs cover a period of three and two years of study, respectively. Upon completion of the Sarjana program, graduates are awarded a doctorandus degree and are eligible for registration as accountants after completing three years of employment in government service.

In addition, the Ministry of Finance provides accounting education to train accountants to serve the government. In 1957 it established the Sekolah Tinggi Ilmu Keuangan Negara (STIKN), which later became the Institut Ilmu Keuangan (IIK), and is now called Sekolah Tinggi Akuntansi Negara (STAN).

Until 1975, STAN and its predecessor bodies awarded both professional diplomas and academic degrees. A 1972 Presidential Decree required, however, that every educational institution with the same characteristics as universities, and conferring a degree course, must be under the supervision of the Ministry of Education and Culture. Given the grave shortage of accountants, the Ministry of Education and Culture granted the Ministry of Finance permission for STAN to continue to conduct accounting courses, but did not permit it to award academic degrees but only a diploma with specialization in accounting.

Some private universities also offer accounting courses, but their qualifications are not recognized by Law 34 of 1954. Those who wish to become accountants are required to pass examinations set by the Committee of Experts. Very few graduates from private universities, however, have passed the examinations set by the Committee of Experts. The vast majority of registered accountants in Indonesia are taught at one of the state universities and at STAN.

The nationalization of Dutch-owned companies in 1957 resulted in the departure of the Dutch, leaving Indonesia with the problem of finding adequate manpower to staff positions of managerial, technical, and academic natures because Indonesians had been deprived of such training and experience during the colonial days, and only a handful were trained after independence.

The main impact on accounting education in Indonesia due to the departure of the Dutch was the gradual replacement of the Dutch influence with American influence. With the assistance of the Ford Foundation, the University of California (Berkeley) provided teaching staff on a five-year contract to the University of Indonesia and at the same time provided opportunities for Indonesians to study in the United States. The Ford Foundation also assisted Gadjah Mada University, which was affiliated with the University of Wisconsin. From that time, the American influence began to gain momentum, although the Dutch influence did not completely disappear, and Dutch textbooks and curricula are still being used in some universities and other institutions. The state of dualism has continued because graduates of both systems are in demand. This is particularly true for the Dutch bookkeeping courses because many small and medium-sized companies still use the Dutch method to keep their books of account.[2]

Enthoven observed that even in the so-called American-oriented universities, teaching materials and courses were often based on old U. S. concepts, with a strong emphasis on financial accounting and auditing, but inadequate attention to other areas.[3]

Under the Dutch system of accounting training, the emphasis was more on general and business economics, often using out-of-date trans-

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[2] A.S. Sapiie, *Sejarah Perkembangan Akuntansi Indonesia* (Fakultas Ekonomi, Universitas Indonesia, 1980).

[3] Enthoven, *Accounting Education in Economic Development Management.*

lated Dutch textbooks. The Universities of Airlangga and Pajajaran followed the Dutch approach until 1977, when the Consortium of Economics Sciences (CES) was formed and introduced a common educational system for all universities, based largely upon the American approach.

Accounting became a very popular course of study. Unfortunately, the institutional structure was unable to cope with the demand because of acute staff deficiencies. The low pay structure provides a disincentive to accounting professionals or graduates to take a full-time appointment. Lecturers usually have other jobs to supplement their income and more often than not, their work at the university is given very low priority, to the detriment of the students. Moreover, the standard of teaching is low, aggravated by inadequate textbooks and lack of facilities, such as computers, classrooms, and journals. Textbooks are mostly American; some institutions still use out-of-date Dutch textbooks. Translated texts are few, and the students' poor command of English makes understanding and teaching the subjects difficult.

At the university level, accounting education was initially predominantly Dutch. This was followed by a period, particularly in the 1960s, when both American and Dutch systems were used before the formation of the Consortium of Economic Science to harmonize accounting programs, which resulted in the conversion to the American system.

The problems of dualism have been exacerbated by the lack of coordination within the training and educational system, the lack of adequate manpower, infrastructure, funds, and other problems.

The present educational path to a professional accounting qualification is relatively straightforward. The Indonesian Accountants Institute (IAI) is not an examining body, so entry is possible by completing a program at one of a limited number of universities or at STAN, or through the professional examinations organized by the CES. However, these routes are very narrow and restrictive. As a consequence, Indonesia has large numbers of accountants of various levels of skill, training, and experience who will never have an opportunity to achieve professional recognition. Indonesia desperately needs more accountants, and it is crucial that all of the accounting skills and resources available in the country be coordinated to ensure that they are used as efficiently and effectively as possible.

In late 1984, to coordinate the accounting education systems and to eliminate dualism in them, the World Bank recommended that the Indonesian government establish a coordinating agency. In February 1985, the Minister of Finance and the Minister of Education and Culture in a joint decree established the Coordinating Agency for Accounting Development (CAAD) with a full-time executive secretary.

The objectives of CAAD are to improve accounting standards and practices in the government and private sectors, to organize the application of accounting standards and practices in stages, and to develop a uniform and unified accounting educational s system.

The formation of the CAAD is the single most important effort by the government to harmonize and improve the standard of accounting education and practice in Indonesia. Previous efforts had failed because of the lack of coordination between the bodies that educate accounting graduates (i.e., the Ministry of Education and Culture) and those who use these graduates (i.e., the Ministry of Finance, which employs the bulk of registered accountants in Indonesia) and also due to a shortage of funds. The most significant development is the involvement of a full-time executive to direct these efforts.

Accounting Education in Singapore

Accounting education in Singapore has developed greatly. The British influence is deeply entrenched in a number of ways: (1) through the export of British accounting personnel; (2) through the export of accounting qualifications; (3) through the establishment of overseas accounting examination centers (e.g., as early as 1935 when the Association of Certified and Corporated Accountants [ACCA] established examination centers in Singapore and Kuala Lumpur); (4) through involvement of British experts in the planning, directing, organizing, teaching, and assistance in one from or another in the development of academic institutions in Singapore (e.g., professional accounting course was first introduced at the Singapore Polytechnic in 1957); and (5) through British historical influence upon the business, education, and administrative environments in the early days of Singapore. This close relationship still exists today.

The pioneering Chinese tertiary institutions founded by the Chinese community in Singapore, such as Nanyang University (1956) and Ngee Ann College (1963), functioned with an educational system based on the Chinese system that, in turn, was influenced by the Americans. This was because these institutions were started with overseas personnel from China and Taiwan. On the other hand, the then University of Malaya and Singapore Polytechnic, established by the colonial government, were modeled on the British system.

Initially, the Chinese institutions were not amalgamated with the overall educational system in Singapore, and, as far as accountancy education is concerned, the British system is the only recognized qualification for jobs in the public sector and jobs in the majority of the commercial sectors.

Accounting education today is divided into three levels (tertiary, semiprofessional, and professional) and at secondary and high school levels for those aspiring to be accountants and accounting clerks. The system also allows those with lesser qualifications, such the commerce certificates conferred by the National Institute of Commerce or Diploma in Business Studies conferred by Ngee Ann Polytechnic, to pursue professional qualifications, such as the Chartered Association of Certified Accountants (CACA), the Chartered Institute of Management Accountants (CIMA), and the Institute of Chartered Secretaries and

Administrators (ICSA). Those with General Certificate Examination (GCE) "A" level may pursue an accountancy degree at the university, enter the polytechnic for a business studies diploma, or take overseas semiprofessional (e.g., accounting technician certificate) and professional (e.g., CACA, CIMA, or ICSA) courses.

Accounting education has reached a stage of maturity at the university. Emphasis has been placed on the staff to perform research, which was not common in the early days. As an undergraduate school, the School of Accountancy at the Nanyang Technological Institute produced more than 400 graduates each year, making it one of the largest schools of accountancy in Asia. The present accounting educational system is adequate and appropriate for Singapore's needs.

In contrast with Indonesia, except for the period between the 1950s and 1960s when Nanyang University was privately run with government assistance, dualism has not existed in Singapore. Nanyang University formerly followed the American system while the then-Singapore Polytechnic was British oriented.

Although foreign assistance in terms of lecturers and consultants is used, the tertiary institutions in Singapore are mainly funded by the government. From the technician or bookkeeping level to the professional level, the British influence is dominant. Also prevalent in most former British colonies is the availability of correspondence courses leading to U.K. professional and nonprofessional qualifications. This type of alternative is not available in Indonesia. On the subject of lecturers, textbooks, and facilities, many resources have been invested, especially in training lecturers by sending them overseas for postgraduate courses. The government has installed modern amenities at the school of accountancy, Nanyang Technological Institute. English is widely used; its use enables current accounting textbooks and materials to be used without the problem of translation as seen in Indonesia.

The output of graduates from a single School of Accountancy at the university was over 400 in 1988; the number is expected to exceed 500 per year in the next few years. This is very much higher than in Indonesia, and, compared with its size, Indonesia is grossly behind in producing graduates in comparable quantity or quality.

The close link between the profession and the School of Accountancy is signified by the presence of a staff member from the university serving as a statutory member on the Council of the Singapore Society of Accountants (SSA). The SSA has its own journal with international contributions and from staff of the School of Accountancy. Research has always been strongly encouraged at the Nanyang Technological Institute and its predecessor institutions.

By any standards, Singapore cannot be classified as a developing country, the category with which Indonesia is identified. Because of Singapore's long-standing cordial ties with the United Kingdom, the U.K.

influence still prevails. Under the British, Singaporeans were allowed to engage in business and trade, and they were less exploited than the Indonesians. Indonesia's relationship with the Dutch was marked by nationalistic uprisings leading to the purge of the Dutch and nationalization of Dutch properties. The bitter experience with the Dutch led the Indonesians to turn to the United States, which was instrumental in securing Indonesia's political independence from the Netherlands. The U.S. influence replaced the Dutch in many areas, and in the field of accounting this took the forms of financial and technical aids to develop the accounting infrastructure, train teachers, grant overseas training to the Indonesians, supply teachers and textbooks, and develop accounting systems at all levels of accounting training and education.

The standard of education in Indonesia is generally poor. This has led the government to seek overseas assistance since the 1950s. Unfortunately, despite these efforts, progress has been slow. In Indonesia, a very large country with many different cultures and languages, coordination and supervision at every level of education are very important. The consequences of neglecting these are dual accounting educational systems and varying standards in practice.

In the majority of developing countries, accounting education and practice are modeled on criteria relevant to industrialized countries. It is common for less developed countries to receive economic aid from developed countries. As recipient countries, these developing countries are usually very dependent on the donor nations for technological assistance, especially in the field of education. All too often, the donor nation's systems are adopted wholesale without any thorough understanding of what the recipients' real problems are. The social, political, and economic attributes of the developing countries are seldom considered, with the result that the projects are infested with implementation difficulties, such as resistance to change, ignorance of the benefits and costs, and bureaucracy, which inevitably leads to considerable delay in development and the waste of resources. Indonesia has received financial and technical assistance to improve accounting education from major foreign aid agencies, particularly from the World Bank, as early as the 1950s. Despite large sums being spent and the involvement of many experts, Indonesia's current weak educational and professional accounting practices indicate that implanting foreign educational systems and practices en bloc into developing countries is not always practical.

Funds and expert advice may be given, but the developing countries must determine their own programs to meet their individual needs. Cooperative efforts might bear better results because problems or weaknesses can be identified and efforts directed to solve them. The crux of the matter is to supervise and review progress regularly with the employment of full-time staff, both from the recipient and donor nations working together to meet the objectives.

The fallacy in most foreign aid, besides introducing what the donor nation thinks is useful to the recipient country, is the perpetual absence of rigorous supervision and accountability of resources given by the donor agency. Such situations are prevalent and the attitude often develops, once the funds have been given, that the recipient nation can manage satisfactorily and the program will succeed. The conspicuous absence of direct monitoring and continuous review seems to result in the problems being left unsolved and the further injection of aid when each preceding project fails. More often than not, the allocated funds were exhausted before the dateline. Experiences such as these may not be peculiar to Indonesia. Indeed, Engleman stressed the need for a flexible program of education for each individual country's circumstances,[4] which will almost certainly differ from the educational ideas applied in most developing countries.

Students in developing countries often must use textbooks that have been written for students in another country. American textbooks have been translated into Indonesian, usually with the difficulties of translation, which distort the clarity of the ideas or concepts.

Engleman believed that the prerequisites of a successful accounting profession in developing countries were these:

1. A full comprehension of accounting goals over and above the mere recording of cash receipts and disbursements.
2. Understanding of the role of accounting for management purposes.
3. Recognition of the principles of business economics.
4. Acknowledgement of the public responsibilities involved in the profession.[5]

Enthoven stated that in many developing countries, the educational system is geared to financial reporting. Accounting education, he argued, should take into account socioeconomic objectives and provide the necessary tools for economic development. Educational content requires both a theoretical and a practical emphasis. To enhance accounting training and the profession, Enthoven advocated that accounting education should consider the following:

1. A conceptual socioeconomic foundation of accounting education and training.
2. A further specialization in the various branches of accounting.
3. A closer link among the institutional, professional, and educational programs and continuous education.
4. A greater focus on forecasting techniques, of both an internal and external nature.[6]

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[4] K. Engleman, "Accountancy Problems in Developing Countries,"*Journal of Accountancy* (January 1962).
[5] Ibid.
[6] Enthoven, *Accounting Education in Economic Development Management.*

CONCLUSIONS

This comparative study indicates fundamental differences between the accounting educational systems in Indonesia and Singapore. Singapore enjoys a high standard of living and can be considered a developed economy with a relatively good manufacturing, financial, and socioeconomic infrastructure. On the other hand, Indonesia is a developing country and, as in most developing countries, the economy is predominantly agrarian. The major part of the population lives in rural areas, and income and wealth are unevenly distributed, with the majority of the population exposed to extreme poverty. Exports consist mainly of agricultural and mineral products. In the case of Indonesia, oil revenue accounts for approximately 70 percent of the national income.

This study found that Indonesia's underdeveloped economy parallels its underdeveloped accounting system. As with many former colonies, the influence of the former colonial master, in this case the Dutch, is still significant in Indonesia. The peculiarity of Indonesia, however, is the coexistence of U.S. influences with Dutch accounting systems, which gives rise to dualism in accounting practices and difficulties in coordination. In the case of Singapore, accounting development and practices are still predominantly influenced by the British models of accounting education, financial reporting, the accounting profession, and government accounting.

Another unique feature of Indonesia is the insignificant influence of foreign accounting firms and multinational companies (MNCs) on accounting practices. Since independence, foreign capital investments and majority foreign stakes in businesses in Indonesia have been discouraged. Most major corporations are owned by the government and, through the employment and training of local accountants, the government exerts an important influence on the development of accounting. The adoption of the U.S. system (which is biased toward listed companies) with its emphasis on financial reporting for investors is likely to draw research, manpower, and other resources from other more important areas, such as management accounting and public sector accounting.

The direction of accounting development in Singapore has moved very much into line with that in the United Kingdom. Although the United States may have an influence through the presence of many U.S. MNCs in Singapore, this influence does not pose a major challenge to the British models, which have been adopted and institutionalized in Singapore for more than 150 years.

The nature of accounting problems in Singapore is different from those in Indonesia. Indonesia's preoccupation with accountancy is mainly of a quantitative nature (e.g., ensuring adequate infrastructure, funds, and personnel to help in the national endeavor to produce more accountants), as was the situation facing Singapore in the 1960s. Singapore's primary concern at the moment is to enhance the quality of the accounting institutions and profession to help it to improve its image as an important finan-

cial center and a sophisticated economy. To achieve this, foreign technology and capital are needed. However, foreign investors need to be assured that the performance and propriety of their investments are properly accounted for. The audit function is important because it enhances the credibility of the financial reports. A strong accounting profession is essential to control and train members in practice. In addition, other areas of accounting, such as management accounting and macroaccounting, are also important to provide a useful measurement function needed for economic planning, control, and decision making.

In conclusion, this paper is not intended to be critical of the efforts of accounting educators in Indonesia. They face a task of immense difficulty and, over the past two decades, a small group of dedicated teachers have performed near miracles in producing the number of accountants who have passed successfully through the system. They have been hampered in their efforts by the intransigence of government departments and by the sporadic and fragmented nature of the overseas aid provided for accounting. Inputs have been provided by various aid programs in an inconsistent and uncoordinated way and, throughout, far too much emphasis has been placed on the adoption of the Anglo-Saxon system rather than analyzing the real accounting needs of the Indonesian economy. However, the formation of the Coordinating Committee holds real hope that it may be possible for these indigenous needs to be identified and that a relevant and feasible solution, appropriate to the Indonesian system, might be identified.

Executory Contracts in Agency Theory

DAVID H. SINASON*

Corporations enter into many types of executory contracts. In fact, many firms could not continue operating successfully without utilizing executory contracts to guarantee labor, materials, and other resources. At present, no financial statement disclosure of executory contracts is required unless such contracts are categorized as contingent liabilities. A situation can exist in which shareholders, potential investors, and creditors are not able to obtain an accurate picture of an organization by the examination of its published financial statements. A corporation might have several undisclosed executory contracts but exhibit financial statements similar to those for firms that have no such agreements.

Executory contracts can provide a guarantee of future supplies of resources necessary for continued successful operations and may require the future expenditure of economic resources, restricting the future utilization of those resources. The reporting of future contractual commitments will provide to external users information of events that have a great certainty of taking place and allow a better comparison between entities with respect to their relative future commitments. Indeed, management has an agency responsibility to disclose such information within the financial statements when certainty and measurability exist. This responsibility is based in the obligation of an agent to act in a fiduciary manner with respect to the principal.

AGENCY THEORY

The legal background of the accounting discussion of executory contacts lies in agency theory. Agency theory is unique in that it takes a results-oriented view of accounting as opposed to the view of accounting as an impetus of people's actions. That is, the agency view of accounting is as a system that has been created to meet specific requirements and adjust-

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ments by means of rule changes as requirements change. Therefore, agency theory derives the need for financial reporting and auditing as a response to the requirements of the business environment.[1]

Agency theory is derived from the need of business entities to monitor resource inputs in order to control the outputs of the business. This assumption is valid due to the fact that monitoring output directly is extremely difficult. Outputs are the result of multiple layers of "team production," which cannot be disentangled.

Surprising as it may seem, it can be proved that whenever inputs interact, calculations of how much total revenue or cash flow has been contributed by any individual input are as meaningless as, say, calculations of the portion of a worker's service due to any one internal organ: heart, liver or lungs.[2]

Any increase in effort by part of the team will be ineffective if not matched with a corresponding increase by other team members. This aspect of team production leads to the inefficient optimization of productivity.[3]

Businesses have engaged in the practice of monitoring inputs as the only practical alternative to monitor outputs. Labor inputs are monitored by supervisors, material inputs are monitored by material managers, and additional inputs are monitored by appropriate department managers. However, these monitors must be monitored, and they in turn must be monitored by higher monitors. The layers continue until the ownership level is reached.

The conclusion is that as long as inputs are observable, business corporations will be formed because they are the best for monitoring the input. As an accountant, I find this conclusion particularly interesting. It helps me to understand why we observe historical-cost accounting systems in which "costs attach" to inputs, and why variance analysis is a popular performance evaluator in labor-intensive firms. Variance analysis is, fundamentally, a sophisticated way of monitoring inputs.[4]

Monitoring does not imply a passive role within the firm. Clearly, manager-monitors are placed in decision-making positions in which traditional theory assumes that managers will implement decisions solely to optimize the productivity of the resources in their charge. Agency theory views the firm as a set of contractual relationships between monitor/decision makers and their subordinates. This relationship holds true for the shareholders and the board of directors, the board of directors and the president, the president, to the line supervisor and the worker level. These contractual relationships may take the form of verbal commitments or employment understandings and are not limited to

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[1] Daniel B. Thornton, "A Look at Agency Theory for the Novice—Part I," *CA Magazine* (November 1984), 90.
[2] Arthur A. Thomas, "The FASB and the Allocation Fallacy," *Journal of Accountancy* (November 1978), 68.
[3] Thornton, 92.
[4] Ibid., 93.

relationships solely within the firm. In short, the firm can be viewed as the nexus of a set of contracting relationships among individuals.

The advantage of agency theory over traditional theory is that it recognizes the fact that the individuals in the monitor/decision-maker relationship and their subordinates will strive to maximize their profits (which may be of a nonmonetary nature). Once management recognizes that the participants in the contractual relationships are acting with the consideration of their own self-interests, management is better able to evaluate its contractual position. Management can consider elements of the employment relationship not traditionally examined by the firm. The most important aspect of this evaluation encompassing the political environment of the employee is the entity relationship. This dimension is consistently ignored by traditional theories.[5] The basic usefulness of agency theory was summarized by Thornton as an analysis of "objective, facts and constraints, taking into account the probable actions and incentives of all concerned parties."[6]

In most agency relationships, the contractual considerations require that principal (monitor/decision maker) and agent (subordinate) incur positive monitoring costs. These costs may take the form of performance evaluation, operations reports, and financial statements. There will be some divergence between the agent's decisions and those decisions that would maximize the welfare of the principal.[7] The costs are incurred to provide the principal some degree of measurement and control with regard to the agent's contribution toward the principal's goals.

Agency theory clearly demonstrates the need for complete, accurate financial information. This will provide the principal the best opportunity to monitor agency relationships. The principal is concerned not only with the past performance of agents but also with how that past performance can be utilized to evaluate future economic success.

EXECUTORY CONTRACTS

An executory contract is an agreement in which reciprocal promises represent the form of consideration at the date of a transaction.[8] Per APB No. 5, the rights and obligations related to unperformed portions of executory contracts are not recognized as assets and liabilities. However, information concerning assets and liabilities arising from executory contracts represents useful information to financial statement users.

[5] R. P. Fox, "Agency Theory: A New Perspective," *Management Accountant* (February 1984), 36–38.

[6] Daniel B. Thornton, "A Look at Agency Theory for the Novice—Part II," *CA Magazine* (January 1985), 100.

[7] Michael C. Jensen and William H. Meckling, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics* (October 1976), 308.

[8] Joe J. Cramer, Jr. and Charles A. Neyhart, Jr., "A Comprehensive Framework for Evaluating Executory Contracts," *Journal of Accounting, Auditing, and Finance* (Winter 1979), 135.

The Committee to Prepare a Statement of Basic Accounting Theory concluded that many executory contracts, which present accounting systems ignore, are relevant, useful financial information. This conclusion is valid because executory contracts represent more than an exchange of promises; they also represent an exchange of future rights. Every executory contract represents an obligation of the enterprise and a future resource acquisition. Therefore, an executory contract represents legal and economic rights of all parties concerned. This concept of legal and economic rights is supported by the fact that the enterprise can market an executory contract.[9]

The recognition of executory contracts would have a major impact on the financial information presented by the firm. The proported reasons for not recognizing these contracts include uncertainty and measurability. Uncertainty in accounting is not unique to executory contracts. Accounts receivable is recognized as being so uncertain in determination that an allowance for bad debts is associated with it as an estimate of its uncertainty. Clearly, many executory contracts have less uncertainty. Purchase commitments (an executory contract) are generally executed on a routine basis and provide a consistent, measurable, legal asset to the corporation.

Measurability is another key issue regarding executory contracts. The difficulty of measuring the value of a legal commitment should not be adequate support for its omission from accounting information. An estimation of the value of these agreements can be obtained with less effort and uncertainty than some other accounting estimates, such as depreciation and bad debts. Accountants have provided information despite measurability problems relating to asset life, salvage value, and amount of debt uncollectible. Appropriate professional judgment and experience are incorporated in estimating existing financial data and may be properly utilized to estimate the value of most executory contracts.[10]

When an executory contract is initiated, a legal, moral, and economic commitment exists. As accountants, a firm is viewed as a going concern unless evidence is available to the contrary. The going-concern concept allows the assumption that the firm will be in existence to fulfill the obligations described in the contract and will be able to utilize the resources received.

In the modern business environment, long-range business planning is imperative to maintain a successful business. Many firms must obtain binding legal commitments for resources in order to ensure that these resources will be available. Because the acquisition of the rights to resources is a major activity associated with the success of the firm, rights should be recognized as soon as sufficient evidence is available that the rights are secure. The early determination of the corresponding liabilities

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[9] T. F. Wojdak, "A Theoretical Foundation for Lease and Other Executory Contracts," *The Accounting Review* (July 1969), 564–65.
[10] Ibid.

is also imperative in that it provides investors and creditors an indication of the total claims on company resources. Incorporating these rights and claims in financial information will provide more complete information.

AGENCY THEORY IMPLICATIONS ON EXECUTORY CONTRACTS

An executory contract is an exchange of commitments. These commitments provide valuable information to the principals in an agency environment. The principals may be concerned with several evaluation criteria such as (1) present financial position, (2) present performance, (3) forecast of operations, (4) future economic events, and (5) availability of resources. In evaluating the present financial position of the firm, the principal would have a more complete analysis if all future contractual commitments are considered.[11] As discussed, these contractual commitments represent useful and relevant financial information. These contracts do represent rights (assets) and obligations (liabilities) in legal and economic form. This information should not be arbitrarily omitted because it does not conform to current accounting practice.

An objective of the firm is the successful procurement of resources necessary to continue productive operations. Firms that operate utilizing scarce resources or that have not secured a contract for obtaining those resources in the immediate future have failed to meet a goal of the current operating period. Therefore, executory contracts are an indicator of the firm's ability to secure future resources, which is an objective of the firm in the current period.[12]

Disclosure of executory contracts can provide information that will enable a more accurate prediction of operations in the coming period. Executory contracts can provide information regarding increases in resource costs (material, labor, or overhead), major changes in revenue due to increases/decreases in sales orders, and resource availability. These are events that are highly probable and accurately measurable and will be reflected in the accounting statements in future periods as measures of operational success (such as cost of goods sold and revenues).

Executory contracts provide information concerning future economic events of the firm. Contracts are entered into because the firm will receive a valuable right. This right is linked to a future performance, which will give rise to an asset and a liability. These future events are useful in evaluating further resource allocations and funds required to dispense future obligations.

Commitments provide resources to the firm. Each commitment has an associated obligation. By recognizing these commitments, the principal can evaluate the need for additional resources and evaluate the

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[11] J. G. Birnberg, "The Reporting of Executory Contracts," *The Accounting Review* (October 1965), 816.
[12] Ibid., 817.

total obligations. The principal can then proceed to make appropriate decisions regarding the firm's needs. Without recognition of executory contracts, users tend to assume that the only resources and obligations of the firm are those listed as assets and liabilities at the balance sheet date.

Most corporations evaluate future commitments on a regular basic. Production meetings evaluate manufacturing schedules and those purchase commitments that will provide the required resources. Marketing reports sales commitments to management, and such information is translated into a manufacturing schedule. Executory commitments are not evaluated by principals outside the firm. Shareholders, investors, and creditors are cut off from information vital to their decision-making requirements.

If the accounting profession believes that one of its objectives is to provide reliable financial information to users, many of whom are principals, the acknowledgement of executory contracts is imperative. Users require these data to evaluate the present and future success of an entity and to make decisions regarding their interest in the firm.

When the firm discloses some of the future commitments the range of any estimate of future income or cash flow is reduced relative to those estimates that would have been made without the information. Since liquidity flows and profitability are the utmost concern. . . the smaller the likely range of error in projected revenues or liquidity flows, the more useful the information is apt to be to the [principal].[13]

The executory contract represents significant information regarding resources and obligations. It is omitted from the financial records because it does not coincide with those accounting recognition dates previously established. Its omission is a failure to report the anticipated future actions of the firm.[14] As Thornton summarized, "From a stewardship standpoint, management is accountable not just for actions they have taken, but also for their probable future consequences."[15] This statement holds particular truth where executory contracts are concerned.

CONCLUSION

Executory contracts contain information vital to decision making in a corporate environment. Principals outside the management structure are uninformed regarding these commitments. This lack of financial communication is a failure of management to perform its agency obligations.

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[13] Ibid., 816.
[14] Wojdak, "A Theoretical Foundation," 567.
[15] Thornton, "A Look at Agency Theory for the Novice—Part II," 100.

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Accounting Developments in the People's Republic of China: A Commentary

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The 1986 International Seminar on Accounting had as its focus "Recent Accounting and Economic Developments in the Far East."[1] Research papers were presented on the accounting development of China, India, Japan, Korea, Hong Kong, and the ASEAN countries. The economic structure of these countries is quite varied and heterogeneous (see Exhibit 1). It may not be feasible to find an association between one or more macroeconomic indicators and the stage of accounting development in the various countries. However, the experience of these countries confirm what V. K. Zimmerman and other students of accounting history have observed: "The practice of accounting and the development of its techniques and related reports have been clearly interwoven with the political and economic developments in various countries."[2]

Abstracting from the specific details of the evolution and problems of the accounting function in the specific national contexts, one may interpret accounting development in terms of a demand/supply analysis. The demand is for accounting information in its broadest sense: financial, managerial, audited, and unaudited. The key factor that affects the demand is the type of macromanagement prevailing in the economy and the changes in that management through economic policies. The supply of accounting information is dependent, at a minimum, on the availability of skilled manpower in

Exhibit 1. Selected Macroeconomic Indicators

Indicator	China	India	Japan	Korea	Hong Kong	The ASEAN Countries				
						Indonesia	Malaysia	Philippines	Singapore	Thailand
Area (Thousand KMs)	9,561	3,288	372	98	1	1,919	330	300	1	514
Population (Millions 1985)	1,040.3	765.1	120.8	41.1	5.4	162.2	15.6	54.7	2.6	51.7
GNP per capita (U.S. 1985)	310	270	11,300	2,150	6,230	530	2,000	580	7,420	800
GDP growth rate (Percentage, 1980–85)	9.8	5.2	3.8	7.9	5.9	3.5	5.5	-0.5	6.5	5.1
Average annual Inflation (Percentage, 1980–85)	2.4	7.8	1.2	6.0	7.9	10.7	3.1	19.3	3.1	3.2
Structure of production (Percentage, 1985)										
Agriculture	33	31	3	14	1	24	—	27	1	17
Industry	47	27	41	41	31	36	—	32	37	30
Services	20	41	56	45	68	41	—	41	62	53
Growth of production (Percentage, 1980–85)										
Agriculture	9.4	2.7	1.6	6.3	—	3.1	3.0	1.7	-1.8	3.4
Industry	11.1	5.4	5.9	9.6	—	1.0	6.7	-2.8	5.9	5.1
Services	7.5	7.5	1.6	6.7	—	6.3	5.9	0.1	6.9	6.0

Source: The World Bank, *World Development Report 1987* (New York: Oxford University Press, 1987), 202–10.

adequate numbers and at a maximum on the development of a full-fledged profession.

The experience of many countries indicates that major changes in the macromanagement of the economy places heavy demands on the accounting function. Such changes may occur over a relatively short time period, but the emerging demand for information can not be met because the supply side is quite inelastic. As a result, the full benefits from economic policies may not materialize until this gap is filled. The development of a dynamic accounting profession is a key component of the economic development effort.

The case of China presents a vivid illustration of this view. China has initiated economic reforms since 1978. In October 1984, the Central Committee of the Chinese Communist Party issued a major document, "Reform of the Economic Structure." This document may come to be viewed by scholars of accounting history as a landmark in the evolution of the accounting function in China. The document provided the directions for the reform measures embodied in the Seventh Five-Year Plan (1986–90). These directions state that enterprises are to be made independent units pursuing profits and responsible for losses; the scope of mandatory planning is to be reduced and replaced by indicative planning, and the focus of planning shifts from annual to medium- and long-term guidance planning. Prices are to be rationalized, with a reduced roles for state-controlled prices and an increased role for "floating" and free market prices; tax, finance, and banking systems are to be reformed, with a larger role given to macroeconomic regulation using indirect instruments such as fiscal, credit, and pricing policies.

In its effort to develop new tools of indirect macroeconomic management, the government established in 1984 the People's Bank of China as a separate Central Bank, with its urban commercial banking functions taken on by the newly credited industrial and commercial Bank of China. All rural credit functions are vested in the Agricultural Bank of China. In 1985, new methods of credit planning and control were introduced. Interest rates were raised with some movement to the unification of rates and the development of a term structure that considers maturity and risk.

The current Five-Year Plan focuses on reform in three main areas. First, enterprise management is improved by giving enterprises further autonomy in production, pricing, and employment decisions; by lowering and equalizing taxes; by increasing competition; by increasing accountability for performance; and by reforming personnel procedures. In addition, more small state enterprises will be turned over to collective or individual management through contracts or leases. Second, the role of the market is to be further extended, and market networks are to be strengthened. The scope of mandatory planning will be further reduced, and markets for capital, technology,

and labor services will gradually be developed. Third, the emphasis of planning will shift from detailed administrative control to indirect macroeconomic control.

The changes in the management of the Chinese economy have been both complex and wide-ranging. The complexity derives from the interrelatedness of its facets, and the fact that the success of each aspect depends on progress achieved in other areas—price reform and enterprise performance reform being a clear example. Price reform in the absence of improvements in enterprise financial discipline will have limited benefits, yet tighter financial discipline and more profit-oriented behavior, if they can be invoked, would exacerbate the adverse impact of distorted prices on the economy. Therefore, enterprise management reforms necessitate developing and strengthening the accounting and auditing functions.

Professor Yu Xu-Ying refers to a new stage of accounting development in China that he labels "decision-making management accounting," which supersedes the earlier stage of "executive management accounting."[3] The Audit Office also was established in September 1983. Since them, similar organizations have been established at the provincial and enterprise levels. In 1986, a five-year plan began to accelerate the training of auditors.[4]

Professor Yu's efforts to describe the elements of the accounting system needed as an integral part of the economic reform are commendable. The demand for accounting information requires an information system combining financial with managerial accounting be developed to serve the micro needs of the enterprise management and the macro needs of the state. Enterprise accountants will have a dual position: to represent the state to strengthen financial discipline in order to protect the interest of the national economy and to serve the enterprise to increase its operational economic benefits.[5] The development of such an information system may be quite difficult and will certainly take time. It will require an extensive effort to train the necessary volume of accountants to generate the data and of managers on the micro and macro levels to utilize the information.

China's objective to quadruple the gross volume of industrial and agricultural output between 1980 and 2000 and its long-term goal to close the gap with developed countries requires and will continue to require significant improvements in efficiency as well as continued high savings and investment rates. This has created demand for accounting information to

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[3] Yu Xu-Ying, "The General Character of Chinese and U.S. Management Accounting and An Analysis of the New Chinese Management Style," *Recent Accounting and Economic Developments in the Far East*, 50.

[4] Farhad Simyar, "Joint Ventures in the People's Republic of China," *Accounting and Economic Developments in the Far East*, 184.

[5] Xu-Ying, "The General Character of Chinese and U.S. Management Accounting."

rationalize operating and investment decisions. The supply response to this demand may be deficient or untimely, which would have an adverse impact on the attainment of its economic objectives.

Contrary to many other developing countries, China recognized the importance of this "accounting constraint" and is making an effort to overcome it. As Professor Enthoven observed,

The efforts by the Chinese to enhance their accounting systems together with their strides to update and upgrade themselves are extremely laudable. China may well become again a major force in accounting in the decades to come, but cooperation and assistance in a variety of fields seems needed to attain the goals of self-sustained accounting development, and to become again a valuable member of an international accounting community.[6]

The serious recognition by the Chinese of efforts to promote the accounting function provides a valuable model for many other countries where the primary importance of accounting was not perceived in drafting the list of priorities for economic reforms.

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[6] Adolf J. H. Enthoven, "Accounting, Auditing and Education in the People's Republic of China," Proceedings of Seminar on Singapore (Dallas: University of Texas at Dallas, March 1988, p. 24).

Forging National Accounting Practices: The Saudi Arabian Experience in Taxation

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The objective of this study is to explore the primary influences of foreign entities that have shaped Saudi Arabian tax accounting, and to analyze the contribution of these entities to the development and formation of that country's tax regulations. The purpose of this research is twofold: to assist international practitioners and to contribute to international tax accounting theory. To help practitioners, multinational corporations, and other potential international investors, this paper is an attempt to provide a better understanding of the Saudi tax accounting practices and to enable a better cash flow projection and profitability evaluation of foreign investments in Saudi Arabia. To contribute to the literature regarding the developmental theory of tax accounting practices in different environments, this paper explores the primary internal and external forces influencing the formation of Saudi Arabian and Islamic Middle Eastern tax accounting theory and practices with particular emphasis on tax concerns.

In addition to its own unique tax features, the authors found noticeable influences of the Egyptian and Pakistani tax codes, U.S. accounting practices, and Islamic principles on taxation in Saudi Arabia.

FACTORS IMPACTING TAX ACCOUNTING PRACTICES IN SAUDI ARABIA

A number of internal and competing external forces have shaped the current tax practices in Saudi Arabia, including influences from developing countries such as Egypt and Pakistan, and from giant multinationals or devel-

oped countries such as the United States. The development of tax accounting practices in Saudi Arabia is especially interesting because of the country's recent, exceptionally rapid economic development. A heavy reliance on the oil industry and the active involvement of foreign countries and multinational corporations in its economy have exposed Saudi Arabia to some very advanced external influences, mitigated by the conservative traditional forces of its Islamic inhabitants and neighboring countries.

Egyptian tax accounting, which is predominantly continental and British oriented, is important for two reasons. First, the Saudis, who initially studied outside Saudi Arabia, were educated in Cairo; many of them are now holding ministerial-level positions in Saudi Arabia. Second, Egyptians occupy some of the senior positions in the tax administration.

Pakistani tax accounting, which combines British (originally, the 1923 Indian Tax Code) and Islamic-influenced methodology, exerts an influence through Pakistanis who have occupied many positions in the lower echelon of the Saudi tax administration.

The U.S. influence was established through the Arabian American Oil Company (ARAMCO), which, since its early days, has provided significant guidance to the Saudi tax administration and legislation. This influence continues through the education of accountants and auditors by Americans both in the United States and in Saudi Arabia. This advanced and specialized education is needed for several factors: first, the increasing number and size of the firms doing business in Saudi Arabia; second, the oil revenue, which accounts for almost all of Saudi Arabia's total export value; third, a pressing shortage of qualified accountants, accelerated by the beginning of capital market formation in Saudi Arabia; and several proposed changes to the auditing certification requirements, which would lead to a demand for improved accounting education.[1]

Prior to the emergence of the oil sector, relatively insignificant trade and commerce activity was dominated by small, privately held firms. To the extent that accounting records were maintained at all, they were simplistic and on a single-entry basis. The growth of large companies and the separation of management and ownership has necessitated a change toward the more informative Western-style accounting practices. This rapid change in accounting emphasis in Saudi Arabia was met first through the use of expatriate labor and subsequently by attempting to educate Saudis both domestically and abroad.

Although foreign education helped reduce the gap at a time when Saudi Arabia could offer only limited accounting education facilities, foreign education was not tailored to the unique local conditions. These circumstances

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[1] For more details, see Adnan M. Abdeen and Uguur Yavas, "Current Status of Accounting Education in Saudi Arabia," *International Journal of Accounting* (Spring 1985).

and the existing regulations[2] did not motivate enough Saudis to become certified accountants. This lack of qualified Saudi accountants has also increased the reliance on external factors for accounting services to meet the needs of the rapidly developing Saudi economy.

The development in higher education in business, as well as in the general fields, is a recent phenomenon. Currently, three universities offer business curricula, including undergraduate majors in accounting. The shortage of qualified accounting faculty is exhibited in the nationalities of the teaching staff of those universities. More than half of the faculty members are non-Saudi. At two universities, the dominant teaching group is Egyptian; Americans are the dominant nationality at the third institution. The principal source of both the doctorate and master's degree for faculty members has been North American universities. Others were educated in the United Kingdom, France, and Egypt. Thus, the accounting systems, methods, and techniques taught are diversified and oriented toward accounting needs and the environment of these various other countries.

Finally, the Saudis view themselves as the keepers of the most sacred locations of Islam, Mecca and Medina, and they actively practice a fundamentalist form of Islam. This has economic and accounting implications because this religion prescribes social, economic, cultural, civil, and political codes that integrate the way of life within the structure of society. Islam stresses the importance to the individual, not to a higher group. Thus, society is to serve the individual; the individual does not serve society. The entire value system seems to rest on this personal responsibility and accountability. The criteria of social goodness is the degree to which it can help its individuals to prosper and develop their potential. Morality rests on the principle of the fear of God's displeasure and the sense of responsibility to God. Individuals with Islamic beliefs might find it difficult to establish a system that is responsible for the collective welfare of others.

The natural state of human economic endeavor is embedded in the belief that the individual may take resources of the earth, utilize them, and profit by them as either an individual or in groups. These groups may freely exchange commodities and services. Because the tenets of Islamic economics are derived from the *Qur'an* and *Al-Sunna*, flexibility in the system reflects interpretations by the Islamic scholars. This flexibility opens the principles to interpretation or operational definitions. The one area that is not subject to interpretation is the interest payment, or *riba*, which is forbidden. Instead, Saudis use the "profit-sharing" concept as the proper method for "investors" (lenders) to be compensated for "investing" (lending) money.

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[2] Royal Decree No. M/43, 1974 (Christian Year).

Despite these internal and external influences, the Saudi tax regulations do not mimic any other scheme blindly. Rather, they are a carefully integrated blend of approaches and methods to fit the unique Saudi Arabian needs.

THE ORIGINS OF SAUDI TAX PRACTICES

The underlying premise of this paper is that various aspects of the Saudi tax regulations can trace their origins to the influences on the Saudi environment; this is the *raison d'etre* for the royal decree instituting taxation in Saudi Arabia. Other forces that have had considerable impact on the Saudi tax practices are those of Pakistan, which exhibit the influences of British tax principles with strong Islamic overtones; of Egypt, which exhibit French (and some British) tax principles with weak Islamic overtones; and the U.S. accounting principles as embodied in the Tax Act of 1934 (as amended by the Revenue Act of 1942), which accounts the other influences. Tax provisions consistent across Egypt, Pakistan, and Saudi Arabia appear to be influenced by Islamic principles, although they might result from British influence. To determine whether it is British influence, a specific provision may be compared with the Pakistani tax code, which reflects the British system. This methodology allows for determining some conclusions regarding the origin of the provision.

The clearest statement supporting the assertion that Saudi Arabia has not been directly influenced by the continental legal system (and tax philosophy) is found in the 1958 ARAMCO/Saudi Arabia concession arbitration. The Tribunal stated in its opinion:

In the course of the proceedings, the Government [of Saudi Arabia] has attached a great deal of importance to the applicability of French administrative law, alleged to be of universal value inasmuch as its principles should be considered as an expression of the general principles of law recognized by civilized States in respect of concessions. Owing to the conspicuous role which this contention played in the Government's argument, the Tribunal feels bound to stress that there are obviously no special reasons to apply French law to a dispute between Saudi Arabia and an American corporation—a dispute which has no connection whatsoever with France. *No one of the theories which are held in France by some writers or by some judicial decisions has ever been "received" in Saudi Arabia....* [emphasis added]

The salient point remains that Saudi Arabia adopted a tax law that reflects many U.S. tax accounting principles but that rejects the principles of *stare decisis*. The lack of case precedent is an Islamic influence because interpretation rests on the Koran and the sayings of the Prophet Mohammed, not on interpretations of these sources.

The question as to why Saudi Arabia adopted U.S. tax accounting principles for its tax regulations can best be seen through the nature of ARAMCO's concession and subsequent changes in the U.S. tax laws.

ARAMCO and its four owners—Standard Oil of New Jersey (later named Exxon), Socony-Vacuum (now Mobil Oil Company), Standard Oil of California, and Texaco—were U.S. companies subject to U.S. tax laws with respect to foreign-source income. The 1933 concession agreement provided for a royalty payment of four shillings gold per net ton of production of oil and gas (production was free of all Saudi taxes and duties). Prior to the Revenue Act of 1942, only generally imposed income taxes were creditable against U.S. tax liability; thus, paying a royalty or special tax provided the same benefit to ARAMCO and Saudi Arabia. After 1942, a "tax in lieu of an income tax" became creditable. It appears that this U.S. tax law change, coupled with Saudi Arabia's desire for increased royalties, was the impetus leading to the 1950 renegotiated concession that provided a 50-50 profit sharing through an income tax on each barrel of oil. With a Saudi tax regulation that parroted the U.S. system, ARAMCO did not have to change its accounting methods. ARAMCO could credit its U.S. taxes with the Saudi tax; the U.S. tax authorities could not reject the "tax" as not being a "tax in lieu of income tax," and Saudi Arabia received the desired revenue whether it was a royalty or a tax.

The territoriality of the Saudi tax regulations is a concept found in neither the Egyptian nor the Pakistani concepts. Egypt taxes worldwide income and Pakistan, although espousing territoriality, broadens the definition of income to include income arising directly or indirectly from any business connection in Pakistan. The Saudi system most closely models the U.S. system of territoriality that excludes foreign-source income as long as it remains permanently invested overseas.

The Saudi definition of income is a familiar one under the precepts of Islam: the purpose of human endeavor is to produce commodities and services from natural resources, utilizing natural resources (including labor) for profit (either as an individual or in groups). It should be expected, therefore, that any growth in assets represents a "profiting" and is subject to Zakat. Because Zakat is viewed as one of the five pillars of Islam, the question is raised as to whether nonbelievers should profit without a corresponding obligation. The answer, which must be negative, sets the stage for imposing the same tax on nonbelievers as on believers.

The concept of imputed profits seems to be derived from Saudi Arabia's historical antecedents of trading and commerce. As with both Egypt and Pakistan, a merchant's reluctance to disclose internal business dealings leads to the conclusion that a reasonable person enters a transaction only if profit is accruing. Because the books of account were primitive and incomplete, the mark-up on goods was assumed to be an industry standard. In Saudi Arabia, a 15 percent mark-up was reasonable; in Pakistan and Egypt, 20 percent was considered the norm.

Saudi Arabia's treatment of costs and expenses is consistent with that of Egypt, Pakistan, and the United States, although the Saudi practice is not so well defined. Many of the cost categories in the Saudi law are consistent with those in the U.S. law. Perhaps this could be viewed as evidence of the influence of multinational and U.S. educational and accounting practices.

The lack of any provision for loss carryforward or carryback is inconsistent with the tax methods of the other countries considered. We believe that this, as with the concept of imputed profits, is derived from the early mercantile period in Saudi Arabia — either the merchant had a loss or not, on a cash basis; the loss fell in the period in which it occurred, not in an earlier or later period.

Al-Sunna conceptually recognizes the consumption of physical items. This does not mean that depreciation is an Islamic influence because all the other countries also recognize this principle. However, the Islamic influence may have its impact through the use of straight-line depreciation as the only acceptable method. This approach seems a pragmatic reflection of the structure of society. Material possessions last only so many years; they are not consumed more in the first year than in the second, and so forth; rather, things deteriorate at a steady rate. By comparison, it may be surmised that, in this respect, both the Pakistani and the Egyptian tax laws reflect Western influences rather than the original societal perceptions of depreciation.

Capital gains is a concept that perhaps most clearly reflects Islamic influences. As mentioned in the discussion of income, capital growth can be achieved only by utilizing natural resources and an individual's efforts. Because *riba*, or fixed interest in any form, is forbidden, capital cannot grow other than by its utilization as a resource. Thus, the growth is profit from an individual's labor and is taxed as such. It is interesting that Pakistan recognized capital gains until 1979, when the code based on the British system was replaced by the present code, introduced as part of the Islamization of Pakistan.

The most notable influence on Saudi tax administration appears to be Egyptian. Tax administration became much more formalized following the thawing of Egyptian/Saudi relations in the late 1970s. The detailed supporting statements and schedules are almost identical to the Egyptian ones, even to the items they support and the specific detail required. Similarly, the use of provisional tax payment at the time of filing the return, the need for a tax file, and the appellate procedures are more closely aligned with the Egyptian system rather than the Pakistani system.

A COMPARISON OF SAUDI ARABIAN, EGYPTIAN, AND PAKISTANI TAX PRACTICES

The corresponding Egyptian and Pakistani practices reveal a great deal of the forces influencing Saudi tax accounting. Despite the striking similarities in the approaches of these Islamic countries, some important differences also exist.

The Saudi tax system is promulgated through a series of royal decrees, ministerial decisions, and Department of Zakat and Income Tax (DZIT) circulars. The DZIT is a central government organization headquartered in Riyadh. All foreign entity tax matters are handled by the headquarters office. The income tax, first imposed by royal decree in 1950,[3] was amended subsequently by royal decrees that abolished the individual income tax section.[4] Thus, the present regulations cover only corporate entities (including joint ventures and partnerships) and Zakat. The Saudi tax regulations are, in many respects, not completely codified; the tax liability of an entity can depend, to a large extent, on how and when certain information is presented. These regulations have not been clear and precise; therefore, they have been interpreted differently, according to the nature of the specific case, not only by the tax authorities but also by taxpayers and their accountants.

In Egypt, by comparison, both individuals and entities are taxed under a schedular system with differing rules and rates that are applied according to the type of activity generating the income. Taxes are levied only on profits of shareholding entities and on income from movable capital.[5] Foreign entities in Saudi Arabia are generally taxed on the same basis as local entities are taxed in Egypt.

Saudi Arabia has adopted two principles from Egyptian Income Tax Law: first, the revenues are differentiated and each revenue is subject to a relevant tax; second, each tax is independent. Egyptian taxes are of three types: revenues from movable property, profits from commercial and industrial endeavors, and earnings from work. Thus, income must be classified as one of three types, and every taxpayer (who is subject to more than one tax) may exempt a portion of the income in the highest tax rate.

As with Egypt, Pakistan has a schedular tax plan[6] administered by the Central Board of Revenue. This board is empowered to make rules to achieve the purposes of the ordinance and to determine the income chargeable to tax in certain cases.

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[3] Royal Decree No. 17-2-28-3321, 21/1/1370 A.H. Note that all (A.H.) dates are in the official Hejira calendar notation.

[4] Royal Decree No. M/37, 4/5/1395 A.H.

[5] Income Tax Law No. 157 of 1981, as amended.

[6] Income Tax Ordinance, 1979.

Zakat

Zakat is the religious tax[7] levied in accordance with Islamic law (*shari'a*) on Saudi nationals, both corporate (wholly Saudi owned or on the Saudi share of corporate profits of entities jointly owned with foreigners) and individuals. Kuwaitis, Bahrainis, and Qataris are treated as Saudis for Zakat purposes. Zakat is levied on proceeds, profits, and gains from all the sources: business, industry or personal work, and property or monetary acquisitions of whatever type or description, including commercial and financial transactions and dividends, livestock and crops, capital, and income from capital. Entities subject to Zakat that are engaged in industrial or commercial activities are required to keep proper accounting records from which the tax liability may be assessed.

Zakat is imposed at a 2.5 percent rate on income and property (including equity invested in the operations) minus net fixed assets that are not held for resale (i.e., the shareholder's net worth in the business). Half of the Zakat is payable to the DZIT, and the other half is to be distributed directly by the Zakat payer to the poor.[8] Joint stock companies, however, must pay the full Zakat to the DZIT. Zakat is due only after one full annual cycle on the funds invested, calculated from the date of inception of the enterprise. Late payment of Zakat is not subject to penalty payments of any kind.

In comparison, Zakat is not a statutory tax in Egypt; it is a statutory tax only on bank and savings accounts in Pakistan.

The Taxpayers

Saudi tax regulations do not explicitly differentiate between residents and nonresidents, but between Saudis and non-Saudis. The tax regulations are territorial, and only certain activities are taxable. Income tax is levied on non-Saudi individuals, on the net profits of non-Saudi entities doing business in Saudi Arabia, and on the shares of profits of non-Saudi shareholders in Saudi or joint-venture entities. In essence, all profits arising or "derived" (which is very broadly interpreted) from sources in Saudi Arabia are subject to tax. An entity that conducts activities both inside and outside Saudi Arabia at the same time is clearly taxable under the regulations. For an entity to be exempted, it must show that it conducts its activities wholly outside Saudi Arabia and has no presence or "derived" income in Saudi Arabia. Since 1975,[9] income tax at graduated rates has been levied annually on both individuals and entities (with the exception that income tax is not applicable to income from individual employment).

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[7] Royal Decree No. 17-2-28-2077, 1380 A.H.

[8] Royal Decree No. M/76, 30/10/1396 A.H.

[9] See note 2.

In comparison, Egyptian tax is levied on the worldwide net profits of entities operating in Egypt (although tax treaties may reduce the burden on foreign-source income). Nonresident firms pay taxes at the same rate as resident entities, regardless of whether the foreign entity has its main activity or just a branch operation in Egypt. In the case of branch operations, only the branch's worldwide income is taxed.

The Pakistani tax is generally territorial, although its applicability is somewhat broadened through a definition that includes income directly or indirectly from any business connection in Pakistan. Similarly, certain payments (such as interest or royalties) made to an entity not otherwise subject to the tax ordinance may make that entity subject to a withholding on the payment.

Taxable Income

Saudi tax is based on net profit that is defined as gross income (less allowable deductions) derived from Saudi sources. Income is deemed to be of a Saudi source if either of the following occurs within Saudi Arabia: the work or service (1) is performed or (2) is delivered.

Similarly, the Egyptian tax is imposed on annual profits from the relevant enterprise. The law provides no definition regarding the categories of income included in the term *profits*.

Unlike Egypt, the Pakistani ordinance goes to great length to define income through classes and by examples. "Salaries," for example, are detailed as including wages," annuities, pensions, gratuities, fees, commissions, allowances, perquisites or profits in lieu of or in addition to salary or wages." The entity is assessed for tax purposes on its total income in the financial year immediately preceding the assessment year (each assessment year commences on July 1). The total income is the total amount chargeable under the various types of income less admissible deductions and set-off for losses plus any exempted income expressly included in total income. Taxable income is defined as gross income less allowable deductions. Income from foreign sources may be included at the firm's discretion, and this enables firms to avoid double taxation.

Profits realized by non-Saudi partners in general partnerships are considered income or profit from capital investment for which the tax liability is computed in the same way, but at different rates.

Imputed Profits

Tax computations at the graduated rates are made for each non-Saudi entity according to the received payments. Payments received by Saudi entities are not subject to this imputed profits tax. The reporting entity must, however, report details of such payments as a regular part of the tax filing procedures.

Similarly, the Egyptian tax code imposes tax on "actual profits as shown on the balance sheet." If the taxpayer has kept inadequate records or has failed to file a declaration, the tax authorities impose an estimated or imputed profits tax. Although these amounts may be entirely discretionary, they could not be less than 20 percent of the estimated gross revenues.

Deductible Expenditures

All expenditures incurred wholly and exclusively for the Saudi business are, at least in theory, allowable deductions from income.

Egyptian tax is assessed on the basis of an entity's net profits after deducting all "normal costs" necessary for carrying on the activities of the enterprise (including the sale of fixed assets). Here again, the term *costs* is not defined. Egyptian law details only part of the allowable deductions. Pakistani regulations give more details of the allowable deductions.[10] Unlike these more thoroughly detailed systems, the Saudi definition of deductible expenditures is open to interpretation.

Costs and expenses not allowable in Saudi Arabia as deductions are mainly intercompany charges[11] for general overhead payments to foreign social security insurance plans for employees working in Saudi Arabia, foreign taxes paid, and any indirect expenditure charged for general administrative expenses incurred by a foreign entity's related offices not within Saudi Arabia. These resemble expenditures not recognized as deductibles under the Pakistani tax code.

Loss Carryforward and Carryback

Saudi Arabia has no provision for loss carryforward or carryback. Tax returns showing losses within the tax year are subject to prolonged scrutiny by the "loss committee" of the DZIT before being finally approved.

In Egypt, losses are deductible from gross profits. A loss may be carried forward for five years, but it may not be carried back. In Pakistan, losses, except for those arising from speculation or capital losses, may be set off against any type of income. The ordinance makes provision for loss carryforward for six years (ten years in the case of an "ailing" industrial unit). Losses in speculative transactions may be deducted only from gains in speculative transactions.

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[10] Ibid., Section 23.

[11] Intercompany charges for technical and engineering support are deductible if (1) the costs have been incurred, (2) the costs have not resulted in an increase in value of fixed assets or inventories or reduced liabilities, (3) the costs have been incurred to make a profit, and (4) the profits are subject to Saudi tax.

Depreciation

Entities in Saudi Arabia are entitled to deduct from profits "a reasonable sum against depreciation of assets used or employed in the operations."[12] Depreciation is calculated on the straight-line method on an annual basis at rates set by the DZIT. Companies are not allowed to exceed the rates set by DZIT unless there were extraordinary circumstances, in which case the rates are to be established according to actual working conditions. Written approval by DZIT is needed for departure from the straight line depreciation method.

Egypt permits depreciation on either straight-line or a declining balance method with the actual rates negotiable on a case-by-case basis. However, foreign corporations can use only the straight-line method. For new equipment used for production, an investment tax credit is allowed in the first year of acquisition (for 25 percent of the cost). Depreciation may not be delayed until the end of the tax holiday (normally five years for all new entities) but may be negotiated to fifteen years.

Pakistan permits depreciation on either a straight-line or declining basis with an incentive of up to 40 percent depreciation (depending on the asset) in the first year when the plant and equipment are placed in production.

Capital Gains

The Saudi tax system has no provision for capital gains. Egypt, like Saudi Arabia, treats capital gains as ordinary income. Similarly, Pakistan no longer treats capital gains separately from ordinary income. However, although Pakistan taxes capital gains as ordinary income, sections of its tax code address capital valuation issues and loss carryforward. Losses on sales of capital assets are subject to scrutiny because the Pakistani Central Board requires proof that the transaction is "an arm's-length" transaction, especially because capital losses may be carried forward for six years and can be used to offset future capital gains. Although Pakistan has no special capital gains tax, many entities are tax exempt as part of a wide-ranging plan of investment incentives.

Dividends and Interest

Dividend distribution by entities within Saudi Arabia is not subject to income tax, nor are any taxes payable on the distribution of capital in the event of a dissolution. Unlike Saudi Arabia, Egypt and Pakistan treat dividends as ordinary income.

Although the Islamic concept of *riba,* or interest, is prohibited, Saudi Arabia avoids the issue by taxing interest as an "income accruing from cap-

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[12] Article 14(e) of the Income Tax Regulations.

ital investments." Such revenues received from local sources are, however, included in gross income as ordinary income and are accordingly taxed as ordinary income, not as capital gain. No tax is levied on revenues from government obligations or savings accounts, but other interest is taxed as ordinary income.

In Pakistan, interest paid to foreign lenders is subject to a 55 percent withholding, unless adjusted under a double-tax treaty or (1) the loan is for a government-approved project, (2) the interest rate is not excessive, (3) repayment terms and the grace period are reasonable, and (4) the use of the loan results in foreign exchange benefits that are greater than the debt-servicing costs.

In 1985, Pakistan changed to an interest-free banking system based on the Islamic principles. Thus, the needs of the corporate sector may be met mainly through *modaraba* (participation-term certificates) and *musharika* (profit-and-loss sharing). Lenders under the Islamic system share in the borrowers' profits by taking nonvoting shares in the venture for which the funds have been loaned. These shares are gradually repurchased by the firm as the "loan" repayment with the lender receiving dividends (interest) on the shares outstanding.

CONCLUSION

The goals of this paper were to trace the origins of Saudi accounting practices and to compare them with the practices of some other Islamic countries. Because the Saudi economy underwent a sudden and rapid development, it had no complete, established tradition. Thus, local practices were exposed to a variety of external influences. The Saudi example provides a rich case study of the forging of tax accounting practices amid competing internal and external forces. We can clearly conclude that despite these influences, the Saudi Arabian tax accounting system does not mimic any other practices blindly. Rather, it stands as a carefully integrated blend of approaches and methods to fit the unique Saudi Arabian needs.

Setting Accounting Standards for Malta

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In 1979 an important piece of legislation, the Accountancy Profession Act (amended in 1986), dealing directly with matters affecting the accounting profession, was passed in Malta. The legislation's declared aim was "to regulate the accounting profession and to provide for matters concerning therewith or ancillary thereto."

The need for such regulation had long been expressed because accountancy in Malta expanded rapidly in various aspects during the post–War II period. As often happens in such situations, however, the changes were not always for the better. Although the number of practicing accountants and the services they provided expanded greatly, different accounting practices for analogous circumstances were accepted in local accounting practices. This acceptance reduced the value of the accounting information provided as a relevant basis for decision making.

The Act is significant in several respects: in creating the Accountancy Board, conferring official recognition on the local Institute of Accounts, and providing a more formal definition of the qualifications, duties, and responsibilities of Maltese practicing accountants. The Act also generated the first steps to address the theoretical difficulties resulting from the changes mentioned in the preceding paragraph by providing, inter alia, for the establishment of Maltese accounting standards.

To date, however, Maltese authorities have not publicly announced any plans regarding the establishment of local accounting standards. The purpose of this paper is to consider some proposals for the establishment of Maltese accounting standards. This consideration might help the local standard-setting body.

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The first section of this article describes the main features of the commercial environment within which Maltese accounting operates. The characteristics of the Maltese environment are quite different in various aspects from those existing in the United Kingdom. Malta is a former British colony, and it usually turned to British practice. A brief description of Malta's environment is therefore essential before valid suggestions regarding the most suitable local accounting standards can be made. The second section briefly outlines the different types of standards and refers to financial accounting standards and guidelines dealing with management accounting matters; the latter is a relatively new area and little discussion of it is found in the domestic accounting literature. Foreign experience with financial accounting standards indicate the types of management accounting standards that can be promulgated.

The third section considers actual suggestions for accounting standards. Although foreign efforts in this regard are considered, they are related mainly to the issues raised in the first two sections. The issues flow logically from the combination of these different aspects and consider both changes in the local accounting environment deemed necessary to improve the chances of success in setting accounting standards and the steps to be followed in actually setting the standards.

THE LOCAL ACCOUNTING ENVIRONMENT

In the period since the World War II, particularly during the last twenty-five years, Malta has enjoyed substantial economic progress. The number of business units multiplied during this period with the products and services offered becoming increasingly more sophisticated and varied. In the services section, tourism has become one of the most important mainstays of the Maltese economy, and in the production field, new technologies and production methods have made its products more competitive and capable of exportation to hitherto difficult markets. Following foreign developments, different types of business organizations were formed. More and more people from the different strata of the social structure joined the ranks of the entrepreneurs. Very often foreign investors cooperated in business ventures.

Such economic expansion is certain to have an affect on attitudes. One would expect the demand for information regarding business activity to increase. To a large degree this has not occurred in Malta. The relevant reasons are apparent in the following review of the environment within which accounting functioned during this period.

The trends in the number and types of Maltese business units registered with the Registrar of Commercial Partnerships is presented in Exhibit 1. In addition to the overall growth in the number of the different types of busi-

Exhibit 1. Types of Maltese Business Units

Business Units	1968 No.	1968 %	1973 No.	1973 %	1978 No.	1978 %	1983 No.	1983 %
Partnerships								
En Nom Collectif (General)	263	17	259	9	290	7	287	5
En Commandite (Limited)	5	0	6	0	6	0	7	0
Partnerships Anonyme (Limited Companies)								
Public	32	2	35	1	44	1	48	1
Private Nonexempt	94	6	289	11	408	10	575	10
Private Exempt	1,188	75	2,254	79	3,376	82	4,820	84
	1,582		2,843		4,124		5,737	

Source: Registrar of Commercial Partnerships.

ness units, several features concerning the local accounting environment are noted in the following sections.

The Increasing Popularity of the Limited Liability Company

Partnerships decreased in percentage terms from 1968 to 1983; the number of private companies (exempt and nonexempt taken together) increased during the same period (see Exhibit 1). Data in Exhibit 2 indicate that the limited liability company form of organization is gaining in popularity even with the very small Maltese entrepreneurs, possibly due to the increasing awareness of the benefits of limited liability.

Legislation Affecting Exempt Private Companies

The first and only piece of legislation concerning the form and duties of business units of the post–World War II period is the Commercial Partnerships Ordinance (CPO) of 1962. For partnerships anonyme (limited companies), the legislation relied heavily on the British Companies Act of 1948. However, although the British Act has since been amended a number of times, the Maltese CPO has remained unchanged.

Private companies were originally intended as an appropriate form for family businesses. When the British Companies Act of 1948 was passed, it was considered advisable to protect private companies from the competition of large public companies; accordingly, a class of "exempt private companies" was created. Such companies were exempt from the obligation of filing accounts with the Registrar. The Maltese legislators were probably similarly inclined when they passed the CPO in 1962. When the British Companies Act of 1967 abolished the exempt private company, the privilege of not filing accounts was extended to unlimited companies. Because

Exhibit 2. Size of Public and Nonexempt Private Companies According to Share Size

Share capital as of 1984	Number	Percentage
Lm 2,000 or less	240	37.0
Lm 2,001 to 5,000	52	8.0
Lm 5,001 to 10,000	50	7.7
Lm 10,001 to 50,000	109	16.9
Lm 50, 000 to 100, 000	53	8 .2
Lm 100,001 to 1,000,000	114	17.6
Over Lm 1,000,000	29	4.5
TOTAL	647	100. 0

the CPO in Malta has not been amended, this type of nonreporting limited company still exists. The number of those companies and their influence on the local economy are steadily increasing. The original fear of the competition of the large local public companies does not seem to have materialized, according to the data presented in Exhibit 1. In fact, in 1983, although forty-eight public companies were on the Register of Commercial Partnerships, only thirty-six actually functioned. Of these, eleven had a share capital of less than Lm 100,000.

The Predominantly Small Size of Local Business Units and Their Accounting Systems

In a small country such as Malta, which has a population of little more than a third of a million, it is perhaps to be expected that most of the local business units are small in size. This expectation is confirmed by data in Exhibit 2, which report the size according to share capital of public and nonexempt private companies.

The information as to the size of share capital is considered indicative of the general size of Maltese business units. According to the Census of Industrial Production, in 1984, for example, local manufacturing units numbered 1,473 and contributed nearly 30 percent of the gross domestic product at factor cost. Of these, 1,157 (79 percent) employed less than ten workers; only 24 (2 percent) employed more than two hundred workers.

Small firms have their own special characteristics. Very often, for example, no distinction exists between the ownership and management of such units. The owners/managers, although independent and forward looking, frequently lack knowledge of accounting, particularly management accounting and internal control. This makes their firms more susceptible to financial difficulties.

When reporting to the Securities and Exchange Commission regarding problems of small businesses and proposed solutions, Professors Bryan and Friedlob cited a study by Ronald Clute regarding Chicago firms seeking

Small Business Association assistance.[1] This study indicated that 40 percent had financial difficulties precisely because of accounting problems. Approximately 20 percent had no accountant and another 18 percent had accountants who were either incompetent or indifferent. A survey designed to assess the adequacy of the accounting function in small Maltese firms[2] indicated their position to be as precarious as that of the Chicago firms. Of these firms, 32 percent employed "accountants" who had only elementary, if any, formal knowledge of the subject. Three-fourths of these firms were found to lack even a double-entry bookkeeping system. On the other hand, 30 percent of the firms had accountants with a degree or diploma in accountancy; all of these firms had an adequate accounting system. However, only 5 percent of these degree/diploma-holding accountants were employed on a full-time basis.

The Extent of Financial Reporting by Maltese Companies

According to S.144 of the CPO, every company, except those exempted from this requirement by S.148, must attach to the annual return registered with the Registrar of Partnerships

a written copy, certified by at least one director of the company to be a true copy, of every balance sheet laid before the company in general meeting during the period to which the return relates (including every document required by law to be annexed to the balance),

and

a copy certified as aforesaid, of the report of the auditors on, and of the report of the directors accompanying each such Balance Sheet.

What actually happened in practice, however, was reported in a survey of the records of annual accounts filed by local companies with the Registrar of Partnerships over an eighteen-year period.[3] In total, less than half of the annual accounts that should have been filed have actually been forwarded to the Registrar. Companies with the smallest amount of share capital file their accounts only one-third of the time. The rate improves as the amount of share capital increases, with the best compliance coming from the largest companies. These companies, however, file their accounts in only two of three times.

A variety of reasons could explain this state of affairs. According to S.145 of the CPO, in case of default in complying with this requirement, every officer of the company in default shall be liable to a penalty not

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[1] F.L. Bryan and G.T. Friedlob, "Why Small Businesses Fail: Testimony Proposes Solutions," *Management Accounting* (January 1984), 16.

[2] A. Magro, "Accounting Information within the Small Firm: An Evaluation of Current Practice in Malta," B.A. (Hons.) Accountancy Dissertation (University of Malta, 1985).

[3] T. Mercieca, "A Survey on Commercial Partner ships in Malta (1965-1983)," B.A. (Hons.) Accountancy Dissertation (University of Malta, 1985).

exceeding £ 5 for every day during which the default continues. This fine is a tough penalty even by today's standards. It seems, however, that the punishment actually given is not so stringent; it is so small, in fact, as not to constitute an effective deterrent. Another reason for such poor compliance could be the lack of knowledge of such matters on the part of those responsible for those companies. As was stated, most of the defaulters are what may be considered to be small companies that seldom employ qualified accountants. Their owners/managers, although experts in their particular types of work, may have only the very basic management and accounting knowledge. And, not surprisingly, reporting accounting information to outsiders may not be taken seriously.

LOCAL USERS OF ACCOUNTING INFORMATION

Another important characteristic of Maltese business units is that of the various groups who have an interest in business units and who therefore have a legitimate right to information about them. Different types of reports dealing with this matter have been published in different countries; three such reports and their users are listed in Exhibit 3.

As can be seen, although grouped differently in Exhibit 3, the same users of accounting information are present in each country. The reason for this similarity is obvious: the countries represented are similar; they are economically very advanced, have essentially the same political and commercial systems, and are comparable socially and, to a substantial extent, culturally. A list of users for a country diverse in these respects would probably be quite different. In a country such as Malta, for example, a list of local accounting users would not include sophisticated users such as accounting analysts and advisers or regulatory agencies, such as a stock exchange. Instead, a list of its users would mainly include the "traditional" ones listed as direct users in the Accounting Principles Statement list in Exhibit 3.

The outside shareholder group is one of the few groups that predominates. The accounting literature in the countries represented in Exhibit 3 contains much material emphasizing the outside shareholders' point of view. Even the official pronouncements on accounting matters that have been issued extensively cater to this group.

In Malta the outside shareholder group is not so important. The vast majority of Maltese companies are private, exempt and nonexempt; due to the small size of the companies, many of the shareholders are also managers. If they have the required knowledge, they can easily satisfy their information needs. In the majority of the very few local public companies, shareholding is divided between private and institutional investors. In the case of the private shareholders, as the records of the Registrar of Partnerships indicate, of the approximately 5,100 that existed at the end of

Exhibit 3. Users of Accounting Information

United States *Accounting Principles Statement No. 4* (New York 1973)	United Kingdom *The Corporate Report* (London 1975)	Canada *Corporate Reporting: Its Future Evolution* (Toronto 1980)
Direct users	Equity investor group	Shareholders
Present and potential owners	Loan creditor group	Creditors—long term
Present and potential creditors and suppliers	Employee group	Creditors—short term
Managers	Government	Employees
Taxing authorities	Business contact group (trade creditors and debtors suppliers, other companies)	Non-executive directors
Employees	Analyst adviser group	Customers
Customers	Public	Suppliers
Indirect users		Industry groups
Financial analysts and advisers		Labor unions
Stock exchanges		Government departments and ministers
Lawyers		Regulatory agencies
Regulatory or registration authorities		Other companies
Trade associations		Standard setters, academics
Labor unions		

1986, no less than 4,300 were shareholders of three of these companies, one of which is a bank in which the government had a 60 percent share. The institutional investors are often a government agency. If any group can claim to be the most involved in the local commercial environment, it is the government, as both a lender and a shareholder. The local banks, which are owned and/or controlled by government, are the major providers of loan finance. The local banks' percentage of advances to deposits rose from 15 percent in 1960 to 57 percent in 1982.[4] The Malta Development Corporation, which is a government agency, had an equity stake in more than 250 manufacturing firms by 1983. In a number of cases, this was a controlling interest.[5]

Other potential local users of accounting information are customers, suppliers, and employees/labor unions. The major characteristic of these groups is, again, their lack of sophistication in accounting matters.

Despite the increasing acceptance during the last forty years of accountancy as a full-fledged profession, the value of accounting in decision making has not been truly recognized in Malta, but this situation is improving.

[4] Central Bank of Malta, *Quarterly Review* (September 1982).
[5] MDC annual report, 1983.

Those concerned with commercial activity are seeking more knowledge on accounting matters. In the last few years, for example, in addition to the five-year, full-time course leading to the B.A. Hons. in Accountancy degree, the Faculty of Management Studies at The University of Malta has conducted accountancy-related courses for middle management and supervisory personnel from general business, specialized courses for hotel management, and courses leading to the Diploma in Business Law and Accounting. This increased awareness can lead to increased use of accounting information, in turn leading to an expansion of and improvement in the financial information provided by business units.

To be useful for decision-making purposes, the accounting information provided must be relevant to the purposes of the information users; therefore, one of the important requisites for relevance listed by the Report of the Inflation Accounting Committee of the United Kingdom is comparability.[6] *Comparability* means that the information is presented in such a way that the decision maker can recognize similarities, differences, and trends.[7] So that these can be recognized, the information provided must be uniform in that it is determined by use of the same accounting procedures, measurement criteria, and classifications and methods of disclosure.

Uniform reporting criteria have been introduced in various countries through various legislative acts; however, because of various defects in the formal legislative process, the need for additional regulations and guidelines regarding these reporting criteria arose when the accounting environment became more developed and complicated. This need was met by various accounting standards and guidelines issued in the individual country by either the profession itself (as in the case of the United States, the United Kingdom, Canada, and Australia) or by some agency purposely created by the country's legislative body (e.g., West Germany, Belgium, and France).

In Malta the only regulations that have been issued on accounting matters are those found in the Commercial Partnership Ordinance of 1962. Local economic, commercial, and social conditions have changed so much during the last quarter of a century as to render this Act inadequate. Thus, Maltese accounting standards are needed.

The uniformity to be fostered through adopting such standards should, however, be meaningful within the local context and should not simply follow standards adopted abroad. A local order of priority for setting accounting standards and guidelines must be established. During the process of setting the accounting standards, the foreign emphasis on financial

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6 Report of the Inflation Accounting Committee (The Sandilands Report) (London: HMSO, 1975).

7 Belverd E. Needles Jr., *Financial Accounting* (Boston: Houghton Mifflin, 1983), 214.

accounting matters, almost to the complete exclusion of management accounting aspects, may be found not to be appropriate given the characteristics of the Maltese environment.

DIFFERENT TYPES OF ACCOUNTING STANDARDS

Even in a small country such as Malta, different groups of people may be interested in accounting information. Each of these groups has its own particular need for such information (e.g., to invest, to lend, or to make wage claims). It would be ideal if specialized accounting reports could be prepared for each of these groups. Such a reporting is not yet available, and the specific needs of the different users are yet to be identified. This would include identifying how users use the information that they receive; whether information overload and confusion would ensue if different reports are produced; and how to regulate and standardize each of the different reports.

The accounting information that is usually produced by a particular business entity is more conveniently separated into two major subdivisions: management accounting information and financial accounting information. Of these two branches, the latter has received major attention as to regulation and standardization. This information is addressed by the different external users who, unlike internal management, cannot have the power to dictate what information is to be provided and who must use the general, routine reports available. Only in the last few years has management accounting information received such consideration due to its increasing use by outside users, such as banks that require cash-flow reports. In Malta such groups are the most important. Banks, government agencies and departments, creditors, and labor unions are the main users of accounting information and are likely to ask for special-purpose reports. Rules dealing with inconsistencies are also necessary to increase value of these special-purpose financial reports.

The accounting standards that have been issued to deal with financial accounting matters can be classified in two groups: (1) those dealing with the latitude present in the disclosure of financial accounting information (disclosure standards) and (2) those concerned with the accounting rules or principles that are to be used to measure and value the elements of information that are to be disclosed in financial reporting (measurement standards).

According to Edey, the financial accounting standards dealing with disclosure can be divided into three groups[8]:

1. Standards dealing with the disclosure of the assumptions adopted and

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[8] H.C. Edey, "Accounting Standards in the British Isles," in Baxter and Davidson, *Studies in Accounting*, 3rd ed. (London: ICAEW, 1977), 274.

the methods used in drawing up the accounts. Examples of such standards are Statement of Standard Accounting Practice (SSAP) No. 2 in the United Kingdom, and the International Accounting Standard (IAS) No. 1, both entitled "Disclosure of Accounting Policies." Clearly, such disclosure is necessary. An interpreter of the results shown by financial statements needs to be furnished with the assumptions made and methods used to arrive at the reported results.

2. Standards specifying the format that accounting statements are to adopt. The purpose of such standards is to achieve uniformity of presentation to improve the communication of financial information. An example of such standards is that dealing with the Statement of Sources and Application of Funds. This type of standard is a characteristic of the practice in Germany and France where the items to appear in the annual financial statements are actually numbered and given an order.

3. Standards requiring separate disclosure of specific matters, such as depreciation, research and development expenditure, and extraordinary items. These and similar items have an important bearing on the results achieved, and their disclosure is of great benefit to the interpreter of the financial statements. Edey notes that standards often anticipate requirements that eventually become legal codes.[9] An example of this is the requirement regarding disclosure of development costs in the English Companies Act, 1981, that relies greatly on the treatment of this item in the earlier SSAP No. 13, "Accounting for Research and Development."

Measurement standards are necessary because of the flexibility available within the historical cost accounting system in the calculation of periodic results. Different alternatives can be adopted to allocate the original cost of assets between time periods to achieve the required matching of revenues and related costs, or to value stocks and work-in-progress. The adoption of any of these alternatives results in different measures of profit or loss for the same accounting period. This could lead to different decisions by the users of accounting information. Because of this, measurement standards, such as the English SSAP No. 9, "Stocks and Work in Progress," are required to restrict the choices available to the reporting entity in estimating its results. Such restriction is deemed necessary not merely to achieve comparability of the results of different companies or of the same company over different time periods, but also to limit the freedom of choice in the redistribution of costs from the lean years to the abundant ones.

Management accounting guidelines are a relatively new area. Few countries have issued them, and where they have been published, such as in the United Kingdom and the United States, they are still in the comparatively

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9 Ibid.

early stages. Consequently, little guidance can be obtained by studying foreign efforts in this regard, which is perhaps regrettable because environmental differences may not be so important in the area of management accounting standards. However, a good indication of areas where standardization would be beneficial can be obtained by following what has been done in the field of financial accounting standards and applying similar standardization to the management accounting area.

The main task of management accounting is to give information to internal management for making sound decisions, both long term, as in the case of capital investment appraisal, and short term, as with pricing and bidding for contract decisions. Such information also assists in planning, budgeting, and controlling costs, and in establishing of a system of internal controls.

Management accounting systems are essentially different and compliance with set norms involves effort and cost. This is admittedly a problem and although it persists whatever the type of standards being established, it is more acute for management accounting. The area is essentially the domain of internal management and if standardization from outside the firm is not properly done, the effort could easily come to be perceived as interference.

SUGGESTIONS REGARDING THE SETTING OF LOCAL ACCOUNTING STANDARDS

This paper suggests the setting of accounting standards for Malta. Certain aspects of the local accounting environment are not conducive to improvements in financial reporting and may hinder the success of the standard-setting process. Before suggestions that deal directly with accounting standards can be made, certain changes are proposed to make the environment more receptive to such standards.

The first suggestion is to eliminate the category of the private exempt company. The situation that prompted the legislators in other countries to cater to such companies does not exist in Malta. The vast majority of Maltese private companies, many of which are large by local standards and not exactly family concerns, still take advantage of this provision of the law. If the utilization of accounting information is to be encouraged locally, this avoidance of disclosing activities cannot be allowed to continue. Malta should follow the example set by the United Kingdom and should abolish the private exempt companies.

Another suggestion concerns the utilization of qualified accountants by all firms in Malta. Maltese firms have a dearth of proper accounting knowledge. This does not encourage compliance with standards because those responsible for the financial reporting function do not understand the technical matters involved. Therefore, the employment of qualified accountants is desirable.

Another point regards which of the Maltese companies are to come within the purview of the standard-setting process. The usual practice internationally is to distinguish between companies according to size. In the case of the Maltese environment, however, it seems appropriate not to exclude any company, however small. Certain types of standards, such as those dealing with the basic components of a cost accounting system and with the basic formats of financial and costing statements, would be appropriate even in the case of small companies.

The Accountancy Profession Act of 1979, which concerns the participants in the standard-setting process, should be emphasized. In Malta the authority to set accounting standards has been vested in the Minister of Finance by S. 8 of the 1979 Act. An advantage of this amendment is that any pronouncements issued receive the same respect given to the accounting standards setter. The major disadvantage is that this arrangement is susceptible to political pressure, as Burggraaff said:

> Governments in today's western democracies are not acting as supreme and impartial arbitrators, but are pursuing the aims set by the party in power. They may make all issues including company reporting subservient to their aims. And like all human beings, politicians cannot always resist the temptation to manage the rules in order to suit their purposes.[10]

One way to overcome this disadvantage is to enlist the services of as many interested parties as possible. The Accountancy Board as envisaged by S. 8 of the 1979 Act is an inadequate source of information for the Ministry because the Board, even as enlarged by S. 4 of the recent Accountancy Profession (Amendment) Act of 1986, is restricted. According to this plan, the Board oversees the implementation of the act in addition to issuing accounting standards. As many interested parties as necessary should participate in the initial stages of a study to decide such matters as the best organizational structure to be adopted; the interest groups, such as accountants, lawyers, businesspersons, unions, and bankers, which are to participate; the relative importance to be attributed to each group; and the means how to receive the best participation. Such recommendation should not pose any serious problems in the implementation because S. 7 of the 1979 Act gives the Accountancy Board the power to obtain required expertise.

As to the actual accounting standards to be issued, the first recommendation is that the local standard-setting authority should initially concentrate on disclosure pronouncements, both in the case of financial accounting standards and management accounting guidelines. Baxter likens the setting of such standards to the formulation of the rules of, for example, the game

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[10] J.A. Burggraaff, "The Political Dimensions of Accounting Standards Setting in Europe" in *Accounting Standards Setting—An International Perspective*, ed. Bromwich and Hopwood (London: Pittman, 1983).

of football. The purpose of the football authority in setting rules is to enable the game to run smoothly.[11] New rules are examined and enacted only when the need arises. However, in setting the new rules, the authority does not start with a discussion of the philosophy of the game or how to solve the problem, even though the alternatives are thoroughly examined. The authority simply recommends a solution. The same procedure is followed with the Companies Acts and, as Baxter suggests, such laws are accepted and obeyed because we do not feel that we are being forced to accept a particular theory or that our freedom of thought is being impinged. Disclosure standards are simply the fruit of research into what information accounting is to provide, how it is to be given, and where it is to be shown. Controversy very often accompanies measurement standards as clearly shown by foreign experience in this regard. For example, in reviewing the experience of the American Accounting Principles Board in its issuance of thirty-one opinions and four statements, Moonitz, concluded that

Practice followed APB recommendations closely and quickly with respect to the form of financial statements.

APB Opinions expressing principles affecting the amount of periodic net income are relatively few. Their quality is spotty. Their impact on practice uneven.

The buffeting the Board took in its attempt to resolve difficult issues led it, in its later years, to avoid them and concentrate instead on compiling a record by issuing opinions on less controversial topics.[12]

The American experience was repeated in the United Kingdom. Standards in such areas as disclosure of accounting policies, funds- flow statements, and earnings per share have had general acceptance because since their issue, virtually every annual report published has complied fully with their provisions.

When the different types of disclosure standards outlined in the second section of this paper are considered with the characteristics of the local accounting environment, it becomes clear that locally there is a need for all the three types of standards. Concerning the disclosure of any assumptions and the accounting policies adopted (Type I standards), in spite of their indispensability for an understanding of the results and position presented, only two are specifically provided for locally. These concern foreign currency translation (CPO 1962, Schedule 3, 8, 9[9]) and taxation (CPO 1962, Schedule 3, 8, 9[10]). They are insufficient; the need exists for standards similar to the English SSAP No. 2 and IAS No. 1, both entitled "Disclosure

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[11] W.T. Baxter, "Recommendations on Accounting Theory" in *Studies in Accounting Theory*, ed. Baxter and Davidson (London: Sweet and Maxwell, 1962).
[12] M. Moonitz "Obtaining Agreement on Standards in the Accounting Profession," *Studies in Accounting Research No. 8* (Sarasota, Fla.: American Accounting Association, 1974), 28.

of Accounting Policies," with a broad scope for management accounting policies as those for the allocation and absorption of overhead and the compilation of relevant costs when these are required in special purpose reports. Type II standards relate to the format of the accounting information. They can be either concerned with the presentation of particular statements, such as the Statement of Sources and Application of Funds, the cash flow information required by banks, and the capital investment appraisal reports, or they can relate to the annual financial statements, as in France. Because Maltese accounting is greatly influenced by the British tradition, the country is more accustomed to standards concerning the format of particular statements. There is no question regarding the desirability of these. The standardization of the format of the annual financial accounting statements should not, however, be dismissed simply because of lack of familiarity in Malta. The Maltese accounting environment is relatively unsophisticated. There is flexibility in the filing of the annual accounts with the Registrar of Partnerships and, more importantly, in the statements that are actually filed. This situation suggests standardizing annual financial statements. Because of the predominance of small local companies, a case could be made for recommending that this be the first matter to be considered by the Maltese accounting standard-setting authority. The standardization of format would be of little help if flexibility is allowed in the presentation of extraordinary items. Pronouncements dealing with the disclosure of specific matters (Type III) are therefore required. Such accounting standards would have value as anticipators of legal requirements. They also help in identifying problem areas before the actual legislation dealing with the specific matter is passed.

The final recommendation to be made concerns a matter that is crucial to the actual process of setting accounting standards. Experience abroad indicates that the setting of a particular accounting standard is a long process sometimes requiring years of hard work. This process is usually divided into different stages that include consultations and meetings with different parties and the preparation of drafts, with the final stage being the publication of the actual standard. The first stage in this long process is research into the particular area being regulated. The final product of this stage is the publication of a research paper outlining specific proposals regarding the problem. These proposals are then considered for further study and investigation.

Despite Malta's limitations due to size, stage of accounting development, and commercial sophistication, the process should follow these stages. Maltese accounting standards should not be reproductions of standards issued abroad under the misguided belief that the country cannot issue better ones, but their issuance should be preceded by research which,

although considering foreign studies and conclusions, focuses mainly on local conditions. The local standard-setting authority should commission such research to some specialist body, such as the Faculty of Management Studies at The University of Malta.

Another suggestion for research concerns local accounting as a whole. Ideally, such research should precede that of specific areas such as accounting standards. One must be clear as to the basic objectives of accounting before specifying accounting rules. Research into the general nature of accounting has already been undertaken abroad, especially in the United States. Such effort is, however, indispensable because it sets the bounds for any accounting standards to be issued. Because circumstances differ in various countries, a different conceptual framework for every individual country or groups of countries is needed. In spite of Malta's size and other limitations, its own conceptual framework is needed to give direction to the setting of local accounting standards. This does not necessarily mean that the efforts of these countries must be duplicated. Some parts, such as those defining the elements that constitute the accounting reports, could be adopted in Malta. Others would need intense study by the Maltese authorities with the help of foreign experts who can draw on their experience in the particular field. International bodies, such as the United Nations Department for Technical Cooperation, should be approached and asked to assist in this effort.

SUMMARY AND CONCLUSION

In a small country such as Malta, where the accounting environment, although improving, is still relatively unsophisticated, setting accounting standards could be an easy process. The only requirement would be the enumeration of foreign accounting standards, perhaps mainly those issued in the United Kingdom (because Malta is a former British Colony), and their adoption wholesale without considering their suitability to local conditions and the consequences of such a course of action. The whole process could, on the other hand, be difficult and complicated if local conditions are considered. This path would be more beneficial to local accountants in particular and to the commercial and economic environments in general.

This paper has examined the conditions within which local accounting must operate and the different types of accounting standards that can be issued. Maltese conditions are so different from those of other countries to necessitate the promulgation of standards suitable to its local national environment, a requisite for the success of the whole process. Suggestions toward this end have been made. These suggestions are not intended as the final word on the matter. More thought, discussion, and research are required if the final goal of developing accounting standards suitable to the Maltese environment is to be achieved.

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An Institutional Analysis of Authorship in
THE INTERNATIONAL JOURNAL OF ACCOUNTING
EDUCATION AND RESEARCH

VICTOR K. L. LEUNG*

During the last two decades, total world trade has risen nearly tenfold, from $419 billion in 1966 to $3981 billion in 1986.[1] Investors have suddenly realized that they are confronted with the problem of worldwide diversity in accounting and reporting standards. One result result of this realization is an increasing awareness of the desirability of eliminating unnecessary differences in accounting and reporting practices that presently exist in various parts of the world.

New educational programs focusing on international aspects of business have been developed. In 1974 the American Assembly of Collegiate Schools of Business (AACSB) changed its accreditation standards to include a requirement that the international perspective of business be added to the business curriculum. Participants of the 1978 AACSB Internationalizing the Accounting Curriculum workshops formally suggested that an international accounting course should be required in the accounting doctoral program to enable future members of accounting faculties to become familiar with the international aspects of accounting.[2] With such an effort, international accounting research is emerging as an eclectic body of literature.

The purpose of this study is to identify the institutional affiliation of the contributors to *The International Journal of Accounting Education and Research* (IJA). The IJA is a semiannual periodical published by the

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[1] United Nations, *1966 International Trade Statistics Yearbook* (New York: United Nations, 1968), 12–13; and *1985 International Trade Statistics Yearbook* (New York: United Nations, 1987), 1066–67.

[2] American Assembly of Collegiate Schools of Business, *The Internationalization of the Business School Curriculum* (St. Louis, Mo.: AACSB, 1979), 26.

Center for International Education and Research in Accounting located at the University of Illinois at Urbana-Champaign. It is one of the major academic accounting journals devoted to international issues.[3]

The findings of this study should indicate which institutions are conducting international accounting research. Some institutions adopt particular publication strategies and concentrate on specific areas of research. At certain institutions the particular talents of individual faculty members may lead them to publish in highly specialized areas of research. By identifying universities conducting such research, the findings of this study also may indicate the research interests of faculty members in international accounting. With the continued emphasis of the "publish-or-perish" policy of many universities, young faculty members who wish to focus their research in the international accounting area may find this study helpful as they attempt to align their own research interest with prospective institutions. Such information may also be useful to graduate students who desire to pursue research in the area of international accounting.

The findings of this study also may indicate whether institutional forces are present in the IJA. *Institutional forces* can be defined as the influence exerted on the admissibility and the acceptance of certain accounting research methods or questions to the literature by an organization, such as a university. If the institutional element is a major force that influences the publication of a journal, such journal may not be an independent standard of scholarship.[4]

This paper contains four sections. The first section provides a general description of the research methodology used in the study. The second section provides a geographical descriptive analysis of the institutions affiliated with the contributors of articles published in the IJA. The third section reviews the individual institutions of affiliation and their rankings by the total number of articles and the ratio of articles/author. The fourth section compares the institutional affiliation of the contributors to the IJA with those of *The Accounting Review* (TAR) and the *Journal of Accounting Research* (JAR).

RESEARCH METHODOLOGY

To determine the institutional affiliation of contributors to the IJA, the school of the author of each article published during the ten-year period 1975 through 1984 was recorded. The twenty issues of the IJA (Spring

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[3] Hanns-Martin Schoenfeld, "International Influences on the Contemporary Accounting Curriculum: International Accounting Instruction at the University of Illinois at Urbana-Champaign," *International Journal of Accounting* (Fall 1974), 71–85; and Steven M. Mintz, "Internationalization of the Accounting Curriculum," *International Journal of Accounting* (Fall 1980), 137–51.

[4] Paul F. Williams, "A Descriptive Analysis of Authorship in *The Accounting Review*," *The Accounting Review* (April 1985), 300–13.

1975 through Fall 1984) consisted of 214 articles. The one book review was not counted. Of those 214 articles, 144 articles had a single author, 59 had two authors, and the remaining 11 had three or more authors, for a total of 256 different authors. Only twenty-seven individuals appeared twice, either as a single or joint author, and only four authors appeared three times or more. The small number of authors that appeared more than once in the IJA suggests that it is not dominated by any small group of individuals.

The published research represents contributions of scholars from ninety-one U.S. universities, thirteen U.K. universities, nine Canadian universities, thirteen Australia universities, and thirty universities in seventeen other countries. Twenty articles were by individuals with no university affiliation. Because seventy articles had more than one author (and sometimes these authors were associated with different institutions), it is more appropriate to count these contributions on an equivalent article basis.[5] On this basis, each article was divided by the number of coauthors to obtain the number of equivalent articles. If an article was by a single author, that author was credited with one whole equivalent article. An article written by two authors was counted as half of an equivalent article for each author and the associated institution. An article written by three authors was counted as one-third of an equivalent article contributed by each author and his or her associated institution, and so on. Because school of affiliation is defined as *the school at which the authors permanently resided*,[6] articles written by visiting scholars were credited to the home institutions; the institutions being visited were not given any credit. Sponsoring institutions should be given the credit, however, if the contributors were on leave from nonacademic institutions.

ANALYSIS OF AUTHORSHIP BY COUNTRY OF AFFILIATION

A geographical analysis of the contributors is presented in Exhibit 1. Authors of 108.83 equivalent articles (50.86 percent of the total 214) were from institutions in the United Sates. Slightly more than 20 percent of the articles were evenly contributed from the United Kingdom (8.72 percent), Australia (7.24 percent), and Canada (6.46 percent). One of the salient features of the authors' country of origin is that 38.17 equivalent articles (17.84 percent) were from thirty-seven authors in seventeen countries: Israel (6.83), West Germany (5), New Zealand (4.5), Poland (3), Japan (3), France (2.83), Saudi Arabia (2.5), Yugoslavia (2), Norway (1),

[5] William R. Henry and E. Earl Burch, "Institutional Contributions to Scholarly Journals of Business," *Journal of Business* (January 1974), 56–66; Williams, "Analysis of Authorship in *The Accounting Review*, 300–13; and Gary L. Sundem, "Overview of Four Years of Submissions to *The Accounting Review*," *The Accounting Review* (January 1987), 191–202.
[6] Williams, "Analysis of Authorship in *The Accounting Review*," 300–13.

Jordan (1), Kuwait (1), Belgium (1), China (1), Colombia (1), Libya (1), Ghana (1), and India (0.5). Therefore, contributions from authors outside North America account for over 33 percent of the total articles.

When compared with that of TAR, the spectrum of authorship of IJA is broader and less dominated by North American universities. In his January 1987 editorial in TAR, Sundem provided a brief description of the authorship of articles published in TAR from June 1982 through May 1986. Of those 138 articles, only 16 equivalent articles (12 percent) were contributed by authors outside the United States and Canada.[7] The geographic difference in authorship for IJA and TAR may suggest that IJA is more appealing to an audience outside North America. This may related to the fact that a sample of U.S. faculties[8] perceives the quality of IJA to be lower than do faculty members of institutions in the United Kingdom, Australia, and New Zealand.[9]

ANALYSIS OF AUTHORSHIP BY SCHOOL OF AFFILIATION

A list of institutions represented in the IJA by authors with more than two equivalent articles is presented in Exhibit 2. The institutions are ranked in terms of total equivalent articles and number of articles per author.

In terms of the total contributions of articles by authors from individual schools, the University of Illinois at Urbana-Champaign and the University of Birmingham of the United Kingdom had the highest total equivalent articles of 5.50 and 4.50, respectively. Indiana University and Hebrew University of Israel tied for the third place; five of their faculty members contributed four equivalent articles. Authors from each of the

Exhibit 1. Geographical Analysis of Authorship in IJA (Spring 1975-Fall 1984)

Country	Number of equivalent articles (Percentage of total in parentheses)		Number of authors (Percentage of total in parentheses)		Number of organizations (Percentage of total in parentheses)	
United States	108.83	(50.86)	133	(51.95)	89	(52.35)
United Kingdom	18.67	(8.72)	21	(8.20)	13	(7.65)
Australia	15.50	(7.24)	22	(8.60)	13	(7.65)
Canada	13.83	(6.46)	21	(8.20)	9	(5.29)
Other Countries	38.17	(17.84)	40	(15.63)	30	(17.65)
No affiliation	19.00	(8.88)	19	(7.42)	16	(9.41)
Total	214.00	(100.00)	256	(100.00)	170	(100.00)

[7] Sundem, Overview of Submissions to *The Accounting Review*," 191–202.
[8] Thomas P. Howard and Loren A. Nikolai, "Attitude Measurement and Perceptions of Accounting Faculty Publication Outlets," *The Accounting Review* (October 1983), 765–76.
[9] Christopher W. Nobes, "International Variations in Perceptions of Accounting Journals," *The Accounting Review* (October 198s), 702–5.

**Exhibit 2. Number of Articles In *The International Journal of Accounting*
by School Affiliation
(Spring 1975–Fall 1984)**

School	Total equivalent articles (Percentage)*	Total number of authors	Article per author
1. University of Illinois (US)	5.50 (2.57)	6	0.92
2. University of Birmingham (UK)	4.50 (2.10)	4	1.13
3. Indiana University (US)	4.00 (1.87)	5	0.80
3. Hebrew University (Israel)	4.00 (1.87)	5	0.80
5. University of New South Wales (Australia)	3.50 (1.64)	4	0.88
6. University of Nebraska (US)	3.33 (1.56)	4	0.83
7. University of Hawaii (US)	3.00 (1.40)	1	3.00
8. City University of New York (US)	3.00 (1.40)	2	1.50
8. State University of New York–Binghamton (US)	3.00 (1.40)	2	1.50
8. California State University-Northridge (US)	3.00 (1.40)	2	1.50
11. Wichita State University (US)	3.00 (1.40)	4	0.75
12. University of South Carolina (US)	3.00 (1.40)	5	0.60
13. Tel-Aviv University (Israel)	2.83 (1.32)	4	0.71
14. University of Manchester (UK)	2.67 (1.25)	4	0.67
15. Pennsylvania State University (US)	2.50 (1.17)	2	1.25
16. University of British Columbia (Canada)	2.50 (1.17)	3	0.83
16. Florida International University (US)	2.50 (1.17)	3	0.83
16. University of Connecticut (US)	2.50 (1.17)	3	0.83
19. McGill University (Canada)	2.33 (1.09)	3	0.78

Note: Fifteen universities have two equivalent articles contribution.

* Percentage is based on the 214 total equivalent articles.

following universities contributed three equivalent articles: Hawaii, City University of New York, State University of New York–Binghamton, California State University at Northridge, Wichita State, and the University of South Carolina. The University of Hawaii ranked seventh because of its higher article per author ratio, and City University of New York, State University of New York, and California State University at Northridge tied for eighth place with 1.50 article/author ratio. Wichita State and South Carolina ranked eleventh and twelfth in article/author ratio (0.75 and 0.60, respectively). Four schools had 2.50 equivalent article

contributions. Pennsylvania State University was assigned fifteenth position, and the University of British Columbia, Florida International University, and the University of Connecticut ranked sixteenth with as 0.83 article/author ratio.

As for the country of origin of the institutions, three of the top five institutions are outside the United States, and seven of the nineteen schools that contributed more than two equivalent articles were non-American institutions. The large number of non-American institutions at the top of the contribution list indicates that non-American scholars are actively involved in the international accounting research. This may be so because international business is of great importance to the citizens of countries other than the United States. Thus, more scholars of these nations may be attracted to international accounting research.

IJA, TAR AND JAR COMPARISON

A number of studies have been conducted on the subject of institutional influence existing in certain accounting journals. In 1975 Bazley and Nikolai analyzed the relative publication rates of the various accounting departments in *The Accounting Review, Journal of Accounting Research, Journal of Accountancy,* and *Management Accounting.*[10] In 1978 Andrews and McKenzie adjusted the rankings of the leading accounting departments reported by Bazley and Nikolai to reflect differences in the perceived quality of these four journals and differences in the sizes of accounting faculties.[11] Windal expanded these studies by examining publications in twelve accounting journals.[12]

The most recent study of the authorship of articles published in accounting journals was by Williams.[13] He investigated the recent authorship in both TAR and JAR to determine whether an institutional element was present in those journals. TAR is published quarterly by the American Accounting Association, and JAR is published semiannually by the Institute of Professional Accounting, Graduate School of Business of the University of Chicago. Both of TAR and JAR have been perceived by accounting academics as two of the highest quality journals in accounting.[14] Williams covered in his study the articles published in TAR

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[10] John D. Bazley and Loren A. Nikolai, "A Comparison of Published Accounting Research and Qualities of Accounting Faculty and Doctoral Programs," *The Accounting Review* (April 1974), 360–62.

[11] Wesley T. Andrews and Patrick B. McKenzie, "Leading Accounting Departments Revisited," *The Accounting Review* (January 1978), 135–38.

[12] Floyd W. Windal, "Publishing for a Varied Public: An Empirical Study," *The Accounting Review* (July 1981), 653–58.

[13] Williams, "Analysis of Authorship in *The Accounting Review,* " 300–13.

[14] Howard and Nikolai, "Accounting Faculty Publication Outlets," 765–76; and Nobes, "International Variations in Perceptions of Accounting Journals, " 702–5 .

from July 1978 to April 1982, as well as articles published in the JAR during Autumn 1978 to Spring 1982. The results of his study indicated that institutional dominance by the author's school of affiliation existed in the JAR but not in TAR, and that dominance by the school of the author's degree existed in both TAR and JAR. He concluded that the publication processes of accounting research were influenced by certain academic institutions.

The IJA was not included in any of these studies. It is therefore interesting to compare the authorship for the IJA with that for TAR and JAR.

The combined study findings regarding the school of affiliation of the author in the IJA and those from Williams study on TAR and the JAR are summarized in Exhibit 3. Using the percentage of total articles as an indication of school concentration, JAR has a significantly higher level of concentration than do TAR and the IJA. The top ten schools on the JAR list together contribute 52.4 percent of the total articles, with the University of Chicago accounting for slightly more than 10 percent. As for TAR, the top ten schools contributed more than 25 percent of the total articles with the individual percentages ranging from 3.4 to 1.8. The IJA has the lowest level of such concentration. The top ten schools represented by the authors account for only 17.21 percent of the total articles. The highest-ranked school, the University of Illinois, contributed only 5.50 equivalent articles, which is less than 3 percent of the total 214 equivalent articles. Furthermore, the 5.50 equivalent articles were the contributions from six different scholars, two of whom were visiting scholars from nonacademic organizations. Therefore, the compiled data on the authorship of the school of affiliation provide strong evidence that no single school dominated the IJA, nor is an "in-house' effect present in the IJA. No institutional element that influences the publication of other accounting journals is indicated for the IJA.

A comparison of authors' school of affiliation (Exhibit 3) reveals that only one school, the University of Illinois, is represented in all three lists. No other school on the IJA list appears on the list of both TAR and JAR. However, three other schools—the University of Iowa, the University of Texas, and New York University— appear on both TAR and JAR lists. This fact suggests that different institutions have different preferences for journal publication and research methodology. TAR and JAR are journals that predominantly consist of empirical or mathematical model research. Articles in the IJA consist mainly of descriptions of different accounting systems and comparative analyses of national accounting systems and reporting practices. Faculty members with quantitative skills may tend to submit their research papers to TAR or JAR and may be inclined not to change their research strategies to have their research manuscripts published in the IJA. One should not interpret such difference in preference

Exhibit 3. Comparison of School of Affiliation of Authors Published in IJA, TAR, and JAR

IJA (1975-1984)			Williams Study: TAR (7/1978-2/1982)			Williams Study: JAR (Autumn 1978-Spring 1982)		
School	Total equivalent articles	Percent of total articles	School	Total equivalent articles	Percent of total articles	School	Total equivalent articles	Percent of total articles
1. Illinois	5.50	2.57	1. Iowa	6.17	3.4	1. Chicago	11.16	10.1
2. Birmingham	4.50	2.10	2. Georgia	6.00	3.3	2. California-Berkeley	6.50	5.9
3. Indiana	4.00	1.87	3. Michigan	5.50	3.0	3. Illinois	6.50	5.9
3. Hebrew	4.00	1.87	4. Northwestern	5.50	3.0	4. Cornell	6.33	5.7
5. New South Wales	3.50	1.64	5. Texas	4.50	2.5	5. Washington	6.16	5.5
6. Nebraska	3.33	1.56	6. New York University	4.33	2.4	6. Stanford	5.66	5.1
7. Hawaii	3.00	1.40	7. Illinois	4.00	2.2	7. Iowa	5.00	4.5
8. City University of New York	3.00	1.40	8. San Diego State University	4.00	2.2	8. New York University	3.50	3.2
8. State University of New York	3.00	1.40	9. Oklahoma	3.50	1.9	9. Texas	3.50	3.2
8. California State University-Northridge	3.00	1.40	10. Purdue	3.25	1.8	10. Pennsylvania	3.50	3.2
Total	36.83	17.21	Total	46.75	25.7		57.81	52.4

as an indication that empirical or mathematical model research contributes more to the accounting discipline than do the descriptive, analytic articles. Different research methods should be employed in accordance with the specific nature of the subject being investigated.[15]

CONCLUSIONS AND LIMITATIONS

This study provides a detailed, descriptive, institutional analysis of authorship of articles published in the IJA. The findings of this study indicate that (1) no groups of individuals dominate authorship in the IJA; (2) the IJA is accessible to a relatively wide audience with contributions from a wide spectrum of scholars from various parts of the world; it is not dominated by the North American universities; (3) in-house and institutional influences are not present in the IJA; and (4) when comparing it with TAR and JAR, the IJA has the lowest level of school concentration with the top ten schools accounting for only 17.21 percent of the total articles. This study thus provides evidence that the IJA is a journal with an independent standard of scholarship and is truly an international journal that does not cater to North American interests alone. The study explains why the perceived ranking of the quality of the IJA is higher by faculties of non-American institutions than faculties of U.S. institutions.

The purpose of this study is limited to providing a description of the authorship of the IJA. It is not an attempt to evaluate the quality of the individual published articles. Equal weight is thus assigned to each article. The study has certain limitations. First, it is confined only to the IJA and excludes publication of other academic journals, professional periodicals, conference proceedings, monographs, dissertations, and working papers. Second, this study covers only a relatively limited time period, from the Spring 1975 to the Fall 1984. Third, this study assigns credits only to the institutions with which the authors were affiliated when the articles were published or submitted; these institutions may not be the ones that exerted the greatest influence on the authors for their contributions in international accounting. It is likely that the schools from which the authors' degrees were granted had a greater impact on their research specialties and capabilities. Nevertheless, the results of this study do give a general picture of the contributions of different universities to publications in the area of international accounting.

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[15] S.J. Gray, " International Accounting: A Review of Academic Research in the United Kingdom," *International Journal of Accounting* (Fall 1983), 15–42.

Index of Volume 23 by Author's Name and by Subject Area

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AUTHOR INDEX

Accounting Education and Professional Development

Accounting Theory

Miscellaneous

INSTRUCTIONS FOR AUTHORS

1. Manuscripts should be submitted in triplicate to the Editor, Professor V.K. Zimmerman, The International Journal of Accounting, 320 Commerce Building (West), University of Illinois at Urbana-Champaign, 1206 South Sixth Street, Champaign, Illinois 61820, USA.

2. The language of the journal is English.

3. Text should be typed double spaced on one side of the paper. A 3cm wide margin should be left at both sides of the text, 4cm wide margins at top and bottom of page. There is no maximum length for contributions but authors should write concisely.

4. The title of the paper should be typed on a separate sheet, and the author's name should be typed on the line below. The affiliation and address should follow on the next line. In the case of coauthors, respective addresses and affiliations should be clearly indicated. Correspondence, proofs, and offprints will be sent to the first-named author, unless otherwise indicated. All pages of the manuscript should be numbered.

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6. The abstract should be followed by no more than 6 key words, characterizing the scope of the paper, for indexing. These should be in alphabetical order.

7. The paper should be reasonably subdivided into sections and, if necessary, subsections.

8. All headings should be placed on separate lines.

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11. Original line drawings (not photocopies) should be submitted for immediate production. In preparing line drawings, keep the print area of the page in mind. For the best results drawings and lettering should be consistent in size. Use black Ink and make Lines thick enough to withstand reduction.

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[1]William A Dymsza, Multinational Business Strategy (New York: McGraw-Hill, 1972), 49-53.
[2]Geoffrey Holmes, "Replacement Value Accounting," Accountancy (March 1972), 4-8.

16. Manuscripts may include a bibliography at the end of the paper. If so, such references are not to be limited to those references cited in the text. Each entry should contain all data necessary for identification. Citations should be arranged in alphabetical order. Multiple works by the same author should be listed according to chronological order of publication. Examples are Listed blow:

Aliber, Robert L. and Clyde P. Stickney. "Accounting Measures of Foreign Exchange Exposure —The Long and Short of It." Accounting Review, January 1975, 44-57.
American Institute of Certified Public Accountants. Accounting Research Bulletin No. 43. New York: AICPA, 1953.
———Financial Statements Restated for General Price Level Changes. Statement of the Accounting Principles Board No. 3. New York: AICPA, 1969.
Lorensen, Leonard and Paul Rosenfield. "Management Information and Foreign Inflation." Journal of Accountancy, December 1974, 98-102.
Revsine, Lawrence. Replacement Cost Accounting. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

17. Mathematical notation should be stated as simply as possible so as

to simplify typesetting. Alignment should clearly indicate superscripts and subscripts. All equations should be numbered consecutively, and the numbers should be placed in parentheses at the right-hand margin.

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